

Dear Colleague,

Each year we continue to make advances in treating patients with sleep related breathing disorders as part of our dental practice. Through this quarterly newsletter, we wish to share with you some of the factors that make this possible, as well as open communication with your office.

Please let us know if you would like to see a specific topic covered in our next issue. We appreciate the trust you place in us by allowing us to participate in the care of your patients.

Regards

in overjet, overbite, and in the number of occlusal contacts. Furthermore, the patients made a mean of 2.5 unscheduled dental visits per year and a mean of 0.8 appliance repairs/relines per year by a dental technician. The most frequent unscheduled visits were needed during the first year and were a result of acrylic breakage on the lateral telescopic attachment, poor retention, and other adjustments to improve comfort. *The authors concluded that five-year oral appliance treatment does not affect TMD prevalence but is associated with permanent occlusal changes in most sleep apnea patients during the first 2 years.*



Michelle K. Cantwell, D.M.D.

Five Years of Sleep Apnea Treatment with a Mandibular Advancement Device

Martinez-Gomis J, Willaert E, et al.
Angle Orthod. 2010 Jan;80(1):30-6

The purpose of this study was to determine the variation in prevalence of temporomandibular disorders (TMD), other side effects, and technical complications during 5 years of sleep apnea treatment with a mandibular advancement device. Forty patients diagnosed with obstructive sleep apnea received an adjustable appliance at 70% of the maximum protrusion. The protrusion was then progressively increased. TMD (diagnosed according to the Research Diagnostic Criteria for TMD), overjet, overbite, occlusal contacts, subjective side effects, and technical complications were recorded before and a mean of 14, 21, and 58 months after treatment and analyzed with appropriate statistical analysis.

Fifteen patients still used the oral appliance at the 5-year follow-up, and no significant variation in TMD prevalence was observed. Subjective side effects were common, and a significant reduction was found

Oral Appliance Titration in Patients with Obstructive Sleep Apnea Induces the Appearance of Periodic Limb Movements

Guerrero ML, Kim D, et al.
Sleep Breath. 2010 Jan 23

Oral appliance (OA) therapy is considered a first line choice of therapy for some patients with mild or moderate obstructive sleep apnea (OSA) and an alternative form of treatment in those intolerant of continuous positive airway pressure (CPAP) use. According to several studies, periodic limb movements (PLM) appear during effective treatment of OSA with CPAP, but a similar phenomenon has not been described with the use of oral appliance. In this study the authors describe the incidence of PLM in patients with OSA who underwent oral appliance therapy titration. This observational study was set in a six-bed sleep center in an academic, military referral hospital. Patients with OSA (n = 21; 15 men and six women; mean age,

continued on page 2

Oral Appliance Titration...continued

43 years; and age range, 25 to 53 years) were treated with OA during a 1-year period were enrolled. Patients were categorized according to the severity of sleep apnea and incidence of PLM on diagnostic polysomnography. Effective treatment of OSA and appearance or disappearance of PLM with arousal on subsequent oral appliance titration polysomnography were recorded and compared.

Results found that during baseline polysomnography, three of 21 (14%) patients had five or more PLM with arousal per hour while 11 of 21 (52%) patients had PLM with arousal during the oral appliance titration trial. *The authors concluded that oral appliance therapy for obstructive sleep apnea is an effective treatment and ideal for use in military recruits. The appearance of periodic limb movements with arousal during oral appliance use should be considered as a cause of persistent daytime sleepiness despite effective treatment of obstructive sleep apnea in this subset of patients.*

Short and Long-term Usage of a Dental Device in Sleep Apnea Syndrome

Peled E, Yoffe N, et al.
Laryngoscope. 2009 Mar;119(3):585-8

The purpose of this study was to assess the efficacy, the compliance, and the complications of the anterior mandibular positioning (AMP) device in obstructive sleep apnea syndrome (OSA) patients. The investigators performed polysomnographic sleep studies on 38 patients before and two weeks (+/- 3 days) after continuous use of the AMP device. Twenty patients also underwent polysomnographic follow-up recordings after 1 year.

The mean apnea-hypopnea index (AHI) before treatment was 35.6 +/- 17.7 and decreased significantly to 22.7 +/- 15.8 after 2 weeks of treatment. The authors found that the mean AHI after 1 year of usage was 25.3 +/- 12.9, differing significantly from the pretreatment AHI. Seventy-one percent of patients used the device for 18.4 months (range 12-27). One-year clinical evaluation showed preserved dental status, preserved action of the masticatory muscles, and preserved function of the temporomandibular joint (TMJ). Eleven (29%) of the patients did not use the AMP device because of TMJ pain and/or unsatisfying results. The authors concluded that the AMP device is well tolerated in 76% of patients. When tolerated, its compliance and efficiency are preserved across the year without long-term oral and jaw dysfunctions.

Impact of Untreated Obstructive Sleep Apnea on Glucose Control in Type 2 Diabetes

Am J Respir Crit Care Med 2009 Dec 17
Aronsohn RS, Whitmore H, et al.

OSA is highly prevalent affecting 1 in 15 Americans. Several studies have shown that more than 80% of obese people with type 2 diabetes have OSA and that OSA without diabetes is associated with abnormal glucose metabolism, insulin resistance and impaired glucose tolerance. In this study the authors wanted to determine if untreated OSA among patients with type 2 diabetes worsens glycemic control. This study evaluated the potential impact of untreated OSA on hemoglobin A1c (HbA1c) in type 2 diabetes. The investigators enrolled 60 patients with stable diabetes and assessed glycemic control. They then performed a sleep study to detect the presence and severity of OSA.

A total of 46 out of 60 subjects (77%) had OSA for which none was receiving treatment. The OSA was mild in 38%, moderate in 25%, and severe in 13% of subjects. Increasing severity of OSA was associated with worse glucose control. This association persisted after data were controlled for other clinical factors such as physical exercise. Also, elevations in HbA1c appeared clinically important, in that patients with severe OSA had adjusted HbA1c values of nearly 9.5% as compared with patients without OSA (HbA1c < 6%). The study also reported that specific components of the sleep study, such as apnea-hypopnea index (AHI), similarly showed independent correlations with increasing HbA1c. This study confirms a high prevalence of OSA in patients with type 2 diabetes but also demonstrates a positive association between severity of OSA and worsening glucose control.

Nearly 90% of patients found to have OSA in this study had not been previously evaluated or diagnosed. The investigators did not examine whether treating the observed OSA improved glycemic control. But the finding that most of the apneas were obstructive suggests continuous positive airway pressure (CPAP) might improve glucose control. Although not proven by this study, it seems likely that impaired glucose control was a direct consequence of OSA. Future work will define mechanisms of the observed associations noted. Also, studies will be needed to investigate whether CPAP therapy improves glycemic control. But the implications from the present study seem clear. Physicians who manage patients with type 2 diabetes should screen their patients for OSA. At least 80% of their patients, if properly screened and studied, will be found to have OSA, which is a treatable condition. A high index of suspicion is needed. Treating their breathing problem might improve their glycemic control and long-term complications from diabetes.