

Spring 2010

Dear Colleague:

As always, we wish to thank you for your trust and the wonderful patients referred to our office.

This quarters newsletter covers the following topics...

1. Fixed Orthodontic Therapy in Temporomandibular Disorder (TMD) Treatment

2. Five Years of Sleep Apnea Treatment with a Mandibular Advancement Device

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

4. Use of a Structural Equation Model for Prediction of Pain Symptoms in Patients with Orofacial Pain and Temporomandibular Disorders



James E. Metz, D.D.S.

Regards,

Dr. James Metz

Fixed Orthodontic Therapy in Temporomandibular Disorder (TMD) Treatment

Tecco S, Teté S, et al.
Cranio. 2010 Jan;28(1):30-42

This study evaluated the use of a fixed orthodontic appliance in treatment of temporomandibular disorder (TMD) compared to the use of an intra-oral splint. Fifty (50) adult patients, with confirmed anterior disk displacement with reduction in at least one temporomandibular joint (TMJ), were divided into three groups: 20 patients treated with AR splint (Group I); 20 patients treated with a fixed orthodontic appliance (Group II) and 10 patients who

underwent no treatment (Control Group). Joint pain, joint noise, muscle pain, and subjective relief were evaluated monthly before the treatment began (T0) and for six months thereafter.

Subjects in Group I and Group II displayed a significant decrease in joint pain from T2 and in muscle pain from T1 to T6. Subjects in Group I showed a higher decrease in the frequency of joint noise from T1 to T6, compared with Group II. At T2 and T3, the patients in Group II reported a significantly lower discomfort level associated with the devices than subjects treated with the AR splint. However, at T5 and T6, this observation was inverted. *The use of a fixed orthodontic appliance seems to be as efficacious as the use of an AR maxillary splint in the treatment of joint pain and muscle pain, but not in the treatment of joint noise. These results are valid, at least for the short-term clinical results (first six months of treatment). Clinical implications for long-term use are not clarified by these results.*

Five Years of Sleep Apnea Treatment with a Mandibular Advancement Device

Martínez-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

continued on back page

Sleep Apnea...continued

observed. Subjective side effects were common, and a significant reduction was found 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.*

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, 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.

Use of a Structural Equation Model for Prediction of Pain Symptoms in Patients with Orofacial Pain and Temporomandibular Disorders

*Davis CE, Carlson CR, et al.
J Orofac Pain. 2010 Winter;24(1):89-100*

The purpose of this study was to develop and test a biopsychosocial model using structural equation modeling for predicting orofacial pain symptoms in a sample of patients with masticatory muscle pain (MMP). Data were collected from clinic records of 251 adult patients who presented for initial evaluation to the Orofacial Pain Center at the University of Kentucky College of Dentistry and were subsequently diagnosed with MMP. Data were used to fit a model relating stressors, psychological distress, arousal, sleep problems, oral parafunction, and pain symptoms. Items from the Multidimensional Pain Inventory (MPI) and the IMPATH:TMJ, a comprehensive biopsychosocial assessment of patients with temporomandibular disorders (TMD), were used to construct a measurement model of five latent variables.

Estimation of the model indicated a good fit to the data and significant associations between stressors, psychological distress, arousal, sleep problems, and pain symptoms. Sleep problems partially mediated the relation between arousal and pain symptoms. Contrary to hypotheses, no association occurred between oral parafunction and pain symptoms, possibly indicating that any relationship between oral parafunction and pain symptoms may not exist. *Results from the model tested in this study are an additional step toward developing a more comprehensive biopsychosocial model explaining the nature and etiology of MMP in orofacial pain and TMD. With additional development and testing, it may also serve as an aid to planning interventions, especially psychosocial interventions targeting stress management, psychophysiological regulation, psychological distress, and sleep problems.*