TMJ/Orofacial Pain
& Dental Sleep Medicine

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Dear Colleague:

I hope this quarters newsletter finds everyone in good health and spirits. As always I genuinely appreciate your support and look forward to continuing to help you improve the quality of life for your patients.

This quarters newsletter covers the following topics...

1. The Incidence and Prevalence of Temporomandibular Disorders and Posterior Open Bite in Patients Receiving Mandibular Advancement Device Therapy for Obstructive Sleep Apnea

2. The Comparison of CPAP and OA in Treatment of Patients with OSA

3. Objective Measurement of Compliance During Oral Appliance Therapy for Sleep-disordered Breathing

4. Temporomandibular Disorders: the Habitual Chewing Side Syndrome

Regards,

Dr. James Metz

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The Incidence and Prevalence of Temporomandibular Disorders and Posterior Open Bite in Patients Receiving Mandibular Advancement Device Therapy for Obstructive Sleep Apnea

Perez CV, de Leeuw R, et al.
Sleep Breath. 2013 Mar;17(1):323-32

This study was conducted to evaluate the incidence and prevalence of temporomandibular disorders (TMD) in patients receiving a mandibular advancement device (MAD) to treat obstructive sleep apnea using the Research Diagnostic Criteria for Temporomandibular Disorders (RDC/TMD). In addition, it also aims to assess the development of posterior open bite (POB). Data from 167 patients were evaluated at baseline, from 159 patients after 118 days (visit II), from 129 patients after 208 days (visit III), and from 85 patients after 413 days (visit IV). The presence of TMD symptoms was evaluated through a questionnaire. TMD signs were assessed using the RDC/TMD. Clinical evaluation assessed for the presence of POB.

The prevalence of TMD was 33/167 (19.8 %) at baseline. After an initial decrease to 14.5 % on visit II, the prevalence increased to 19.4 % on visit III and finally demonstrated a decrease to 8.2 % on visit IV. The incidence of TMD was 10.6 % on visit II. This decreased on further visits and only two (1.9 %) patients developed TMD from visit III to visit IV. POB was found to develop with an average incidence of 6.1 % per visit. The prevalence of POB was 5.8 % on visit II, 9.4 % on visit III, and 17.9 % on visit IV. *The use of MADs may lead to the development of TMD in a small number of patients. Nevertheless, these signs are most likely transient. Patients with pre-existing signs and symptoms of TMD do not experience significant exacerbation of those signs and symptoms with MAD use. Furthermore, these may actually decrease over time. POB was found to develop in 17.9 % of patients; however, only 28.6 % of these patients were aware of any bite changes.*

The Comparison of CPAP and OA in Treatment of Patients with OSA

Li W, Xiao L, Hu J.
Respir Care. 2013 Jan 3

A systematic review and meta-analysis was performed to compare the outcomes of oral appliances (OA) with those of continuous positive airway pressure (CPAP) in treatment of patients with obstructive sleep apnea (OSA). Relevant studies were retrieved from the following electronic databases up to and including September of 2012: MEDLINE, PubMed, EMBASE, and Central Register of Controlled Trials. The main variables were epworth sleepiness scale (ESS), health-related quality of life, cognitive performance, blood pressure, apnea and hypopnea index (AHI), arousal Index (AI), minimum saturation (Min SaO2),

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The Comparison of CPAP..*continued*

rapid eye movement sleep, % (REM%), treatment usage, side effects, treatment preference and withdrawals.

Fourteen trials were finally included in this review. The investigators results demonstrated that the effects on ESS, health-related quality of life, cognitive performance, and blood pressure of OA and CPAP were similar. Besides, pooled estimates of cross-over trials suggested a significant difference in favor of CPAP regarding AHI, AI, and Min SaO2, while pooled estimates of parallel-group trials showed a significant difference in favor of CPAP regarding AHI and REM%. Moreover, OA and CPAP yielded fairly similar results in terms of treatment usage, hours/night in cross-over trials and, hours/night, nights/week in parallel-group trials), treatment preference, side effects and withdrawals.*The authors concluded that CPAP yielded better PSG outcomes especially in reducing AHI than OA, indicating that OA was less effective than CPAP in improving sleep disordered breathing. However, similar results from OA and CPAP in terms of clinical and other related outcomes were found, suggesting that it would appear proper to offer OA to patients who are unable or unwilling to persist with CPAP.*

Objective Measurement of Compliance During Oral Appliance Therapy for Sleep-disordered Breathing

Vanderveken OM, Dieltjens M, et al.
Thorax 2013 Jan;68(1):91-6

Oral appliance (OA) therapy is increasingly prescribed as a non-continuous positive airway pressure treatment modality for sleep-disordered breathing (SDB). Although OA therapy is reported to be efficacious for the treatment of SDB, data on compliance remain limited to self-report. In this 3-month prospective clinical trial, the main outcome was to assess the safety and feasibility of an objective measurement of compliance during OA therapy using an embedded microsensor thermometer with on-chip integrated readout electronics in 51 consecutive patients with an established diagnosis of SDB (AHI 18.0; age 47; BMI 26.6 kg/m(2); men/women: 31/20). Patients were unaware of the purpose of the study.

No microsensor-related adverse events were recorded. In addition, no problems were encountered during the readout of the compliance data. Out of 51 microsensors, one had a technical defect and was lost to follow-up. In this study, the overall objective mean rate of OA use was 6.6 h per day with a regular OA users' rate of 82% at the 3-month follow-up. Statistical analysis revealed no significant differences between objective and self-reported OA compliance data in this study. *Measurement of the objective OA compliance allowed the authors to calculate the mean disease alleviation (MDA) as the product of objective compliance and therapeutic efficacy. MDA serves as a measure of the overall therapeutic effectiveness, and turned out to be 51.1%. The results illustrate the safety and feasibility of objective measurement of OA compliance.*

Temporomandibular Disorders: the Habitual Chewing Side Syndrome

Santana-Mora U, López-Cedrún J, et al.
PLoS One. 2013 Apr 8;8(4)

Temporomandibular disorders are the most common cause of chronic orofacial pain, but, except where they occur subsequent to trauma, their cause remains unknown. This cross-sectional study assessed chewing function (habitual chewing side) and the differences of the chewing side and condylar path and lateral anterior guidance angles in participants with chronic unilateral temporomandibular disorder. This is the preliminary report of a randomized trial that aimed to test the effect of a new occlusal adjustment therapy. The masticatory function of 21 randomly selected completely dentate participants with chronic temporomandibular disorders (all but one with unilateral symptoms) was assessed by observing them eat almonds, inspecting the lateral horizontal movement of the jaw, with kinesiography, and by means of interview. The condylar path in the sagittal plane and the lateral anterior guidance angles with respect to the Frankfort horizontal plane in the frontal plane were measured on both sides in each individual.

Sixteen of 20 participants with unilateral symptoms chewed on the affected side; the concordance and the concordance-symmetry level were significant. The mean condylar path angle was steeper (53.47(10.88) degrees versus 46.16(7.25) degrees, and the mean lateral anterior guidance angle was flatter (41.63(13.35) degrees versus 48.32(9.53) degrees on the symptomatic side. *The results of this study support the use of a new term based on etiology, "habitual chewing side syndrome", instead of the nonspecific symptom-based "temporomandibular joint disorders"; this denomination is characterized in adults by a steeper condylar path, flatter lateral anterior guidance, and habitual chewing on the symptomatic side.*