JEANNE K. BAILEY D.D.S. INC.
WEST VIRGINIA SLEEP AND TMJ TREATMENT CENTER

Dental Sleep Medicine Update
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Quality Sleep is a Team Effort

As a medical professional, you have probably seen the damaging effects of sleep disorders such as obstructive sleep apnea (OSA). As evidence of both the prevalence of this disorder and the negative consequences it causes or exacerbates continues to mount, the need for diagnosis and treatment becomes ever more imperative.

The implementation of OSA treatments can be hindered in a number of ways. First among these is the ongoing lack of recognition of the seriousness of this condition among the general public.

Financial constraints can present a second obstacle to diagnosis and treatment, while non-compliance remains a primary cause of decreased success rates among patients who are diagnosed and administered treatment.

Overcoming these impediments to treatment can be better accomplished when patients are provided with a network of supporting health professionals who are conversant in the latest developments in sleep medicine, and who act in consort to achieve the best possible results. This is why we are reaching out to you as fellow sleep medicine professionals, in hopes of creating ongoing dialogue that will enhance our mutual goals of patient education, diagnosis, treatment and compliance.

Primary care physicians have long been at the forefront of OSA detection and referral. In recent years, dentists such as myself trained in dental sleep medicine have also come to the front lines, as we are able to provide similar detection and referral procedures, can detect symptoms of OSA based on conditions such as bruxism or TMD, and may see a wide range of patients who do not communicate their symptoms to their primary care physician.

The other important link a dental sleep professional can provide in the chain of treatment for OSA is in the administering of oral appliances for the treatment of snoring and OSA. Oral appliance therapy may be used in conjunction with CPAP, and is considered a primary option for patients who are non-compliant with CPAP therapy.

In addition, ongoing advances in oral appliance design have made these devices the first choice for a growing number of OSA patients, particularly those who exhibit mild to moderate symptoms.

Identifying and treating OSA truly is a team effort, and we hope you will consider us a part of that team. We are actively involved in patient education programs, and in building and maintaining our referral network.

I welcome your feedback, and hope you find these article summaries useful in your own sleep medicine practices.

Dr. Jeanne Bailey

Sleep Apnea Linked to Sudden Cardiac Arrest

New research published online in the *Journal of the American College of Cardiology* indicates that sleep apnea raises the risk of sudden cardiac death. To investigate the link between sleep apnea and sudden cardiac death, a long-term study funded by the U.S. National Institutes of Health analyzed data from 10,701 consecutive residents of Minnesota over age 18 who were referred to the Mayo Sleep Disorders Center between 1987 and 2003 for a first polysomnogram, generally to investigate sleep-disordered breathing. Patients were diagnosed as having obstructive sleep apnea if they had five or more episodes of apnea and hypopnea per hour of sleep. "The presence and severity of sleep apnea are associated with a significantly increased risk of sudden cardiac death," said study leader Dr. Apoor Gami, a cardiac electrophysiologist at Midwest Heart Specialists-Advocate Medical Group in Elmhurst, Illinois.

Sudden cardiac death kills 450,000 people a year in the United States, according to study background information. It occurs when the heart unexpectedly and suddenly stops beating due to problems with the heart's electrical system. Those problems cause irregular heartbeats. The condition must be treated within minutes if the person is to survive. In earlier research, Gami and his team had found that patients with sleep apnea who suffered sudden cardiac death often did so at night, a completely opposite pattern than found in others without sleep apnea who had sudden cardiac death. "That was the first direct link [found] between sudden cardiac death and sleep apnea," Gami said.

Three measures strongly predicted the risk of sudden cardiac death, he added. These include being 60 or older, having 20 apnea episodes an hour or having low blood levels of oxygen. This oxygen saturation drops when air doesn't flow into the lungs. "If the lowest oxygen saturation was 78 percent, or less, their risk of [sudden cardiac death] increased by 80 percent," Gami said. In a healthy person, 95 percent to 100 percent is normal. Having 20 events an hour would be termed moderate sleep apnea, Gami said. Gami found a link, not a cause-and-effect relationship, between sleep apnea and sudden cardiac death. He can't explain the connection with certainty, but said there are several possible explanations. For example, sleep apnea is related to the type of heart rhythm problem that causes sudden cardiac death, he said.

The study didn't address whether those who used sleep apnea treatments would reduce risk. "It would be fair to say we suspect it would," Gami said.

Australian Study Indicates That MADs Compare Favorably with CPAP

During treatment, reductions in arterial stiffness of between 1 and 2 percent was recorded, based on the aortic augmentation index, and these results were similar for both therapies.

Neither MAD or CPAP therapy provided a significant reduction in baseline blood pressure measurements for the overall study group, but within the subset of patients who were initially hypertensive, both therapies provided a roughly equivalent reduction in BP of between 2 and 4 mm Hg.

More significant changes were recorded from the neuro-behavioral metrics. According to the authors: "Overall, this study found that improvements with MAD in sleepiness, quality of life and driving simulator performance were as good or better than CPAP.

Previous studies that have compared subjective sleepiness and quality of life after treatment with CPAP and oral appliances have either favored CPAP or have shown similar effectiveness between treatments.

However, in the studies that favored CPAP, non-adjustable oral appliances were used and these may have been inferior to full adjustable models, as used in our study."

In their summary conclusion, the authors noted that; "This short-term study has demonstrated that the health outcomes in patients with moderate to severe OSA were similar after treatment with CPAP and MAD.

The results are likely explained by the greater efficacy of CPAP being offset by inferior compliance relative to MAD, resulting in a similar 'treatment' AHI with each device.

These findings strongly challenge current practice parameters that recommend that MAD treatment should only be considered in patients with mild to moderate OSA or in those who have tailed or refuse CPAP treatments.

Our findings provide a strong rationale for a long-term comparative effectiveness study of those two treatment modalities.

It is hoped that such studies will allow a rigorous evidence-based approach to challenging current treatment recommendations.

Source: Health Outcomes of Continuous Positive Airway Pressure versus Oral Appliance Treatment for Obstructive Sleep Apnea. Craig Phillips et al; American Journal of Respiratory and Critical Care Medicine, Vol 187/2013.

Herbst Appliance

- Treatment is covered by most medical insurances including PPO and Medicare.
- Over 100 FDA approved oral appliances exists.
- Studies show TMJ-related and bite issues are actually very rare with OAT treatment and if they occur, in most cases, can be successfully managed.

General **Effectiveness** of Oral Appliance Therapy

A number of studies have compared oral appliance and CPAP therapy for the treatment of OSA. Collectively, this body of work indicates that oral appliances are not as generally effective as CPAP, but are effective in a significant proportion of patients, with various studies showing success rates between 30 and 70 percent. In a number of these studies, a significant proportion of patients indicated a preference for oral appliances over CPAP. The literature also shows similar improvements in daytime sleepiness between oral appliances and CPAP treatment, even if the apnea/hypopnea index was higher with oral appliances than with CPAP.
In a study by Barnes and colleagues(1) 28 percent of patients surveyed preferred CPAP, 41 percent preferred oral appliances, and 31percent preferred placebo (a tablet). In a study by Ferguson and associates(2) the compliance to an oral appliance and CPAP were similar, but patient satisfaction was better with an oral appliance.

(1) Barnes M, McEvoy RD, Banks S, et al: Efficacy of positive airway pressure and oral appliance in mild to moderate obstructive sleep apnea. American Journal of Respiratory and Critical Care Medicine;170:656–664.
(2) Ferguson KA, Ono T, Lowe AA, et al: A randomized crossover study of an oral appliance vs nasal-continuous positive airway pressure in the treatment of mild-moderate obstructive sleep apnea. Chest;109:1269–1275.

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SLEEP APNEA APPLIANCE

Oral Appliance (OA) Treatment Guidelines

1. Initial diagnosis: Presence or absence of OSA must be determined before OA treatment.

2. Appliance fitting: OA treatment should be managed by dental practitioners with training in sleep medicine and sleep-related breathing disorders.

3. Primary snoring—Goal of OA is to reduce snoring to a subjectively acceptable level.

4. OSA—Goals of treatment are resolution of clinical signs and symptoms of OSA, and normalization of the AHI and arterial oxygen saturation.

5. OA's are indicated for treatment of primary snoring in patients who do not respond to or are not appropriate candidates for weight loss or sleep position change.

6. OA treatment is indicated for mild to moderate OSA, and for those severe OSA cases where there is CPAP failure or intolerance.
a. OA is preferred by MOST patients.

b. OA is indicated with CPAP failures.

c. OA treatment is indicated when there is failure of weight loss or side sleep position treatments for mild OSA.

7. OA's are not indicated for initial treatment of severe OSA unless the patient refuses CPAP therapy. Upper airway surgery may also supersede use of OA in patients for whom surgery is predicted to be highly effective.

To Refer to Dr. Bailey See Enclosed Referral Form.

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