Let’s Talk About It

There is an ever-growing body of evidence to suggest that oral appliance therapy using mandibular advancement stints (MAS) can provide an effective alternative to CPAP therapy for the treatment of OSA, providing similar levels of disease elimination for a majority of cases. But despite this evidence, it seems that many in the sleep medicine community still view oral appliances primarily as a second-chance option for patients who are provided an initial period of CPAP therapy, and prove to be non-compliant.

It's well-known that compliance rates are higher with oral appliances, but equally accepted that CPAP provides greater efficacy among patients who can accept this therapy. Less defined are factors such as the appropriate length of a CPAP trial before a patient is considered non-compliant, and the role patient education and physician support can play in acceptance. Another concern that is raised by the "first one, then the other" approach is the very real effect of non-adherent patients being lost to the system instead of returning to attempt oral appliance therapy as an alternative.

Perhaps the questions we should be asking as health care providers is not which therapy we should provide, but what therapy might create a level of patient satisfaction and compliance that will result in a long-term benefit. This philosophy calls for a more patient-centric approach to treatment. Key to this approach would be an initial "preference diagnosis" to determine which options are most appropriate for the individual. As part of this process, we should be providing patients with information on the benefits, expected outcomes, and potential side effects of each option, along with the requisite home-care and maintenance requirements. Doing so will require the physician to introduce questions such as which elements of treatment matter most to the patient, and to engaging the patient in conversation and deliberation to identify the option that best matches their informed preferences.

But if we create this dialogue, and include out patients in the conversation, we stand a better chance of providing relief from OSA and the health problems it creates.

Sincerely,

Dr. Jeanne K. Bailey
Long Term Cardiovascular Mortality: CPAP & MAD Therapies May Provide Similar Risk Reduction for Sever OSA Patients

A recent study on the long-term cardiovascular mortality in patients with severe obstructive sleep apnea (OSA) emphasizes the importance of treatment, and reveals some interesting comparisons between treatment modalities. The study involved 570 subjects diagnosed with severe OSA (AHI \( \geq 30 \text{/h} \)) and a control group of 269 subjects who did not exhibit OSA (AHI < 5/h). Subjects were followed up for an average period of 79 months (interquartile range 76-88 months).

All OSA patients involved in the study were initially provided with CPAP therapy. Thereafter, Mandibular Advancement Device (MAD) therapy was offered for those who were non-adherent to CPAP. Patients who declined both treatments were also tracked over the course of the study. In all, some 177 patients treated with CPAP, 72 treated with MAD and 212 who declined treatment were included in the final results, along with the control group.

In the group as a whole, some 42 patients suffered a fatal cardiovascular event during the course of the study. The non-apneic control group exhibited the lowest cardiovascular death rate at 0.28 per 100 person-years. Patients treated with CPAP showed the next-best results with a cardiovascular death rate of 0.56 per 100 person-years. The MAD-treated OSA group showed a slightly higher cardiovascular death rate of 0.61 per 100 person-years, while the highest cardiovascular mortality rate occurred among the non-treated OSA group.

Their average cardiovascular death rate was 2.1 per 100 person-years. These numbers would seem to provide yet another piece of evidence of the risks to cardiovascular health of untreated OSA.

Another interesting conclusion that can be drawn from the study is based on the finding that, although the residual AHI for MAD-treated patients remained significantly higher than CPAP-treated patients (16.3 ± 5.1/h vs. 4.5 ± 2.3/h; P < 0.001), there was a nearly insignificant statistical difference in cardiovascular death rate between the two groups.

These findings lead the authors of the study to conclude that "Both CPAP and MAD may be equally effective therapy in reducing the risk of fatal cardiovascular events in patients with severe OSA."


Oropharyngeal Crowding and Obesity May Predict Effectiveness of Oral Appliance Therapy

As oral appliance therapy has gained acceptance within the sleep medicine community, it has become increasingly prescribed for patients exhibiting mild to moderate symptoms of OSA, not only as an alternative for those who are non-compliant with CPAP therapy, but as a first option. But though the rate of disease alleviation with oral appliances is favorable within this group, there are certain physical factors that may limit the effectiveness of oral appliances.

A recent study from Japan examines the role of obesity and oropharyngeal crowding in the effectiveness of oral appliance therapy. Patients with moderate OSA (AHI < 30/h) were prospectively and consecutively recruited for the study. The Mallampati score (MS) was used as an estimate of oropharyngeal crowding. Follow-up polysomnography was performed with the adjusted oral appliance in place. Responders were defined as subjects who showed a follow-up apnea-hypopnea index (AHI) of >5 with 50% or greater reduction in baseline AHI.

The mean baseline AHI was reduced with an oral appliance from 21 ± 4 to 9.8 ± 8 in 95 subjects. Thirty-five patients were regarded as responders. Logistic regression analyses revealed that both MS and BMI could individually predict the treatment outcome.

When the cutoff value of BMI was determined to be 24 kg/m² based on a receiver operating characteristic curve, 53 obese patients (ie, BMI >24) with an MS of class 4 were indicative of treatment failure with a high negative predictive value (92) and a low negative likelihood ratio (0.28).

Based on these results, the authors concluded that: "patients with moderate OSA who are obese with oropharyngeal crowding are unlikely to respond to oral appliance treatment. This simple prediction can be applied without the need for any cumbersome tools immediately after the diagnosis of OSA."

Measured Versus Self-Reported Compliance of Oral Appliance Therapy

Determining the overall therapeutic effectiveness of oral appliance therapy requires accurate, objective measurement of compliance. Such measurements have recently become possible with the use of micro-sensors that are embedded in oral appliances. These heat-activated sensors are able to provide accurate recording of the device's time-of-use.

A study at the Antwerp Medical Hospital, Belgium, used micro-sensor equipped oral appliances to determine objectively-measured compliance during oral appliance therapy at a one-year follow-up, and to compare these data against self-reported use.

Fifty-one eligible patients were enrolled in this one-year prospective clinical study (men, 61%; mean age, 49 ± 10 years; apnea-hypopnea index, 18.0 ± 11.9 events/h sleep; BMI, 26.6 ± 4.1 kg/m²). Objective compliance during oral appliance therapy at one-year follow-up was assessed with a micro-sensor thermometer. Subjective compliance was assessed by self-report. Patients with a mean objectively measured use of ≥ 4 h/night on 70% of nights monitored were considered regular users. The mean disease alleviation was calculated as a measure of overall therapeutic effectiveness.

The results showed a high degree of agreement between objective and subjective compliance data at the one-year follow-up, with a mean subjective overestimation of 30 minutes. The discontinuation rate at one-year follow-up was 9.8%. The objective mean use rate was 6.4 ± 1.7 h/night at one-year follow-up in continuing users, with a regular use rate of 83%. The mean disease alleviation was 54.9%.

This was the first known study of its type to report the one-year results of objectively-measured compliance during oral appliance therapy. The high agreement between objective and subjective compliance suggests that patient self-reporting may provide an reasonably accurate picture of oral appliance compliance.