

Using a Precision Milled, Continuous Advancement, Oral Appliance with Symmetric Titration to Treat All Severity Levels of Obstructive Sleep Apnea

by Neal Seltzer, DMD, FAGD, D.AADSM, D.ACSDD, D.ASBA; Jeffrey S. Rein, DDS, FAGD, D.AADSM, D.ACSDD, D.ASBA; and Gina Pepitone-Mattiello RDH, C.ACSDD

For years it was thought that oral appliance therapy was limited to treating mild and moderate obstructive sleep apnea and was only to be considered as an alternative or secondary attempt to treat severe levels of OSA.

In 2015, the American Academy of Sleep Medicine and American Academy of Dental Sleep Medicine Clinical Practice Guidelines for the Treatment of Obstructive Sleep Apnea and Snoring with Oral Appliance Therapy noted: “Since the previous parameter and review paper publication on oral appliances (OAs) in 2006, the relevant scientific literature has grown considerably, particularly in relation to clinical outcomes. The purpose of this new guideline is to replace the previous, and update recommendations for the use of OAs in the treatment of obstructive sleep apnea (OSA) and snoring.”¹

Amongst many recommendations, the guidelines state “we recommended that sleep physicians consider prescription of oral appliances, rather than no treatment, for adult patients with obstructive sleep apnea who are intolerant of CPAP therapy or prefer alternate therapy.”¹

The guideline conclusion stated that, “The AASM and AADSM expect these guidelines to have a positive impact on professional behavior, patient outcomes, and, possibly, health care costs.”¹

Although continuous positive airway pressure (CPAP) is a very reliable treatment for OSA, its history of poor compliance, difficulty of use in many circumstances (i.e. travel, lack of electricity), side effects, and

in many cases, outright refusal of use by patients, many physicians have had difficulty considering oral appliance therapy as a viable alternative to treatment.

As of now, the standard for successful treatment of OSA is based on reduction in apnea hypopnea index (AHI) to healthy levels.

Severity levels of OSA can be quantified as follows:

healthy	=	AHI less than 5
mild	=	AHI 5 To 15
moderate	=	AHI 15 to30
severe	=	AHI 30 or higher

Perhaps the best measurement of success in treating OSA is how effective the treatment is over time. Oral appliances have shown efficacy in treating all levels of OSA from mild to severe and additionally show compliance over time far superior to CPAP. This longer compliance combined with their efficacy results in an overall effectiveness with outcomes similar to CPAP.²

Our dental sleep medicine practice, Long Island Dental Sleep Medicine, has been treating patients with oral appliance therapy for over 28 years. In that time, one of the more frustrating observations we have made is the length of time patients are forced to struggle with CPAP when an alternative and more patient-friendly therapy, such as with oral appliances, has been available. In addition, after CPAP failure, physicians rarely suggest alternative treatment such as oral appliance therapy. These patients, therefore, go untreated for long periods of time until they finally research alternatives themselves.



ProSomnus [CA] Sleep Device

Another clinical anecdote is that we have found that many patients with severe a AHI are assumed, by physicians, untreatable using oral appliance therapy. It is our clinical observation that AHI by itself is a poor predictor of success. Many patients we treat have the same AHI yet the breakdown of obstructions and hyponeas may vary proportionately and greatly affect the outcome of treatment. Other factors such as BMI, ODI, positional factors, age, and facial morphology must all be considered. When all aspects are considered, it is often that we have seen oral appliance therapy successfully treat patients with severe levels of OSA.

One of the reasons patients cite for why they are more compliant with oral appliance therapy as a treatment option for OSA is the

obvious small size and comfort of oral appliances as compared to CPAP.

The perfect oral appliance has yet to be developed. The variation in patient oral anatomy as well as consideration of minimizing potential side effects has produced a myriad of oral appliance designs.

In our dental sleep medicine practice, we have used and abused just about every appliance ever developed in our quest to help improve patient outcomes. Recently, we have incorporated the ProSomnus Continuous Advancement [CA] appliance into our armamentarium. Our decision to add this appliance to our list of choices was based on the precision milled platform that forms the basis of its unique design. Milled from a dense uniform acrylic, the ProSomnus [CA] is extremely hygienic, lingualless for increased tongue space, accurate in fit to reduce tooth movement, and engineered with symmetrical titration for comfortable, predictable results.

Below are three recent case studies from our patient population ranging from mild to severe OSA utilizing the ProSomnus [CA] successfully.

It is our clinical observation that AHI by itself is a poor predictor of successful oral appliance therapy.

CASE #1 MILD

Diagnostic AHI = 4.9

CC: Despite his low diagnostic AHI, the patient suffered with morning headaches, lack of dreaming, fatigue, and impaired cognitive function.



Dr. Neal Seltzer received his Doctor of Dental Medicine degree in 1982 from Tufts University, School of Dental Medicine. He is a Fellow of the Academy of General Dentistry. In addition to his general dental practice, he has focused on treating patients with obstructive sleep apnea since 1991. He is a diplomate of the ABDSM, the ACSDD, and the ASBA.

Dr. Jeffrey S. Rein received his Doctor of Dental Surgery degree in 1982 from Loyola University, School of Dental Medicine. He is a Fellow of the Academy of General Dentistry. In addition to his general dental practice, he has focused on treating patients with obstructive sleep apnea since 1991. He is a diplomate of the ABDSM, the ACSDD, and the ASBA.

Gina Pepitone-Mattiello is a Registered Dental Hygienist who obtained her dental sleep certification from the ACSDD. She is the creator of the only certification course for dental auxiliaries to become credentialed in dental sleep medicine. Her passion is to improve awareness and improve the lives of people suffering with sleep breathing disorders. At Long Island Dental Sleep Medicine, she works exclusively treating patients using oral devices to manage OSA.

The authors can be reached at Long Island Dental Sleep Medicine – www.lidentialsleepmedicine.com.

Based on his symptoms, the patient was placed on CPAP therapy. For approximately one year the patient struggled with CPAP, unable to resolve his issues. Eventually at a follow up visit with his sleep physician, alternative treatment of oral appliance therapy was discussed, and the patient referred to our office. A ProSomnus [CA] appliance was inserted April 2018. Almost immediately, the patient stated that he felt better and all of his complaints had resolved. On 6/13/18 an efficacy study was done resulting in an AHI = 1.4

Oral appliances continue to evolve and as they become more comfortable with less side effects there is better compliance.



CASE #2 MODERATE

Diagnostic AHI = 16.5

CC: The patient reported that his family complained about loud snoring and occasional talking in his sleep. He stated that he had lack of focus and was tired all the time by day.

He had a PSG 12/11/17 with an AHI = 16.5

He was placed on CPAP and immediately could not tolerate it because of claustrophobic factors.

The patient was then referred to our office for oral appliance therapy. He was fitted for a ProSomnus [CA] appliance which was inserted February 2018. After several small titration visits over several months and subjective relief of all symptoms, except some slight occasional snoring, the patient was referred for an efficacy study. The study was done on 10/2/18. The AHI was 3.1

CASE #3 SEVERE

Diagnostic AHI = 67.3

CC: The patient was always tired; snoring and gasping in sleep as witnessed by his wife. The patient was put on CPAP therapy but struggled for years with ill fitting masks and pressures that were too high for him to tolerate. This resulted in him eventually discontinuing treatment. He then went untreated for months. It was then that he was eventually referred to our office for treatment.

The patient was fitted for a ProSomnus [CA] appliance 3/2/18. Within weeks the patient reported he was feeling rested, was no longer snoring and stated, “this is much better than CPAP”. At that time he was referred for an efficacy study. Months went by and we did not hear from him regarding results of the study. We called the patient as he was coming due for his six month reevaluation visit. His response was “I am still using the appliance and feel great, so I did not go for the study”. We advised him, that despite his subjective results, he should quantify his results with a follow up study. It was not until 10/16/18 that the study was done, with very positive results showing an AHI = 13.4. After the efficacy study, the appliance was advanced 0.4 mm bilaterally and then he scheduled for another efficacy study. As of this writing, we do not have those results but are hopeful the patient’s AHI will continue to improve.

In our practice, we have used the ProSomnus [CA] successfully to treat dozens of patients ranging in all levels of severity of OSA. It has been our experience that the unique features of this appliance help improve compliance, improve outcomes and ultimately improve effectiveness in reducing AHI.

Oral appliances continue to evolve and as they become more comfortable with less side effects there is better compliance. Improved precision and engineering yields more reliable and predictable results allowing dentists to successfully treat a wider range of OSA severity. 

1. Ramar K, Dort LC, Katz SG, Lettieri CJ, Harrod CG, Thomas SM, sleep apnea and snoring with oral appliance therapy: an update for 2015. J Clin Sleep Med 2015;11(7):773–827.
2. Sutherland K, Phillips CL, Cistulli PA. Efficacy versus effectiveness in the treatment of obstructive sleep apnea: CPAP and oral appliances. Journal of Dental Sleep Medicine 2015;2(4):175–181.