

## NON-SURGICAL UPPER AIRWAY REMODELING AS A TREATMENT FOR OBSTRUCTIVE SLEEP APNEA

Wallace-Nadolski ME<sup>1</sup>, Cortes M<sup>2</sup>, Singh G<sup>3</sup>

<sup>1</sup>Clinilabs/Sleep Disorders Institute, New York, NY, <sup>2</sup>Cortes Advanced Dentistry, New York, NY, <sup>3</sup>BioModeling Solutions, Inc., Beaverton OR

**Introduction:** Obstructive sleep apnea (OSA) is a sleep disorder that involves cessation or significant decrease in airflow in the presence of breathing effort during the sleep period. Commonly, long term therapy, such as continuous positive airway pressure (CPAP) and/or oral appliance therapy, such as mandibular advancement appliances, have been utilized as treatment. However, a recent form of treatment, biomimetic oral appliance therapy (BOAT), offers an alternative non-surgical method, which can putatively resolve OSA by combined maxilla-mandibular correction, and addressing craniofacial deficiencies. The aim of this study is to determine whether changes induced by BOAT produce a more favorable upper airway, which might result in a reduction in the severity of sleep disordered breathing.

**Methods:** After obtaining informed consent, five adults (1 male, 4 females; mean age 44.2 yrs.  $\pm$  9) diagnosed with mild to moderate OSA were started on treatment with FDA-cleared BOAT (mRNA appliance®). After 6 months of treatment, the apnea-hypopnea index (AHI), without the appliance in the mouth during sleep, of each study subject was reassessed by means of a home sleep study. (HST). The findings were analyzed by paired t-tests.

**Results:** The mean AHI for the sample prior to treatment was 18.5 hr  $\pm$  6.2. Following 6 months of BOAT, the mean AHI decreased significantly ( $p = 0.015$ ) to 7.1 hr  $\pm$  4.2 with no appliance in the mouth when the follow-up HST was performed. Thus, a mean decrease in the AHI of 38% was achieved with no appliance in the mouth in the follow-up sleep study. These results are similar to BOAT findings reported elsewhere.

**Conclusion:** Biomimetic oral appliance therapy may provide a useful form of therapy for the resolution of OSA. While the mid-treatment results of this pilot study look promising, long term follow-up of this cohort, as well as further studies using larger sample sizes are warranted.

**Support (If Any):** Cortes Advanced Dentistry, New York, NY 10019, BioModeling Solutions, Inc. Beaverton, OR 97006, Sleep Disorders Institute, New York, NY 10019