

In-home evaluation of efficacy and titration of a mandibular advancement device for obstructive sleep apnea

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Abstract There is increasing evidence that mandibular advancement devices (MADs) can be an effective treatment for some patients with obstructive sleep apnea, a highly prevalent chronic disease. In this study, the objectives were to objectively assess the effectiveness of MAD therapy using a limited channel recorder, and to develop a model for identifying patients who may be appropriate for MAD therapy as the initial treatment option. Thirty patients were prospectively recruited and studied at two independent dentist offices and the participants' homes. Subjects wore the ARES Unicorder for two nights before insertion of the MAD, and again when the dentist determined that the patient had reached the titration endpoint. Self-reported measures of depression, sleepiness, and quality of life were obtained pre- and posttreatment. The reviewer was blinded to the study status while the physiological signals were being visually inspected. Significant reductions in the

apnea/hypopnea index (AHI), hypoxemia measures, and snoring level were observed posttreatment. Twenty-seven of the 30 (90%) patients had a posttreatment AHI (using a 4% desaturation for hypopneas) below a clinical cut-off of 10. All but one patient (97%) exhibited at least a 50% decrease in AHI or had a posttreatment AHI ≤ 10 . Significant differences in body mass index, weight, and neck circumference in patients with posttreatment AHIs above and below a clinical cut-off of five were identified. The linear regression used to predict the posttreatment AHI using pretreatment data resulted in an R^2 of 0.68. The model correctly predicted two patients who were unable to obtain a posttreatment AHI of 10 or less. This study was designed to demonstrate two models of collaboration between a dental sleep medicine specialist and a sleep medicine physician in the monitoring of a patient treated with a MAD. The outcome data suggest that the limited channel recording system can be used as an alternative to laboratory polysomnography to reduce the cost of MAD treatment, and to improve the quality and consistency of posttreatment patient care.

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