Case Control Study in the Treatment of Obstructive Sleep-Disordered Breathing with a Mandibular Protrusive Appliance

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Background: Mandibular protrusive appliances have long been used to treat obstructive sleep apnea/hypopnea syndrome (OSAHS). Their efficacy regarding respiration during sleep varies greatly and remains difficult to predict. In this study the efficacy of a two-splint appliance on nocturnal breathing disorders, sleep profile, and daytime sleepiness were evaluated according to a specially-designed treatment process. Patients and Methods: In this study 42 consecutive OSAHS patients who had been fitted with a mandibular protrusive appliance according to a preset treatment regimen were included in a follow-up analysis. The diagnosis and the degree of severity of OSHAS were determined by polysomnography in the sleep laboratory. The treatment regimen was established with the sleep laboratory physician. Treatment regimen included the diagnostic procedure in the sleep laboratory, each patient's dental requirements, the fabrication of the appliance used, and the titration of the mandibular protrusion. After having grown accustomed to the appliance for 24.5 ± 7.8 days, 34 patients underwent overnight polysomnography.

Results: The mean apnea/hypopnea index decreased significantly from 19.6 ± 12.8 to 3.3 ± 7.8 events per hour to 83%; the apnea index also improved significantly, as did minimal oxygen saturation and the desaturation index. Changes in sleep profile did not reach statistical significance; the arousal index ($p < 0.02$) and the subjectively-assessed daytime sleepiness ($p < 0.02$) decreased significantly. A therapeutically-required AHI of below 5 events per hour was achieved in 88.2% of the patients.
Conclusion: A significant improvement in the respiratory situation of the vast majority of OSAHS patients, particularly in their AHI, can be achieved when one applies the procedural steps* and employs the mandibular protrusive appliance we describe herein.
* Selection of patients who exhibited BMI<30, AHI <25 and good dentition.