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Minimizing the mandibular advancement in an oral appliance for the treatment of obstructive sleep apnea

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Abstract: Objective: In the treatment of obstructive sleep apnea (OSA) with an oral appliance (OA), there is no gold standard method to fine-tune the mandibular advancement. This study aimed at analyzing the effect of gradual increment of mandibular advancement on the evolution of the apnea-hypopnea index (AHI).
Methods: OSA patients were recruited from a sleep unit. All treatments started with an oral appliance without mandibular advancement. After 2 weeks, the AHI was assessed with a respiratory polygraphy. Mandibular advancement was initiated with a step size of 1 mm and the evolution in the AHI was assessed. The target protrusion was the one that achieved the highest reduction in AHI and the least side effects. Anthropometric data, sleep questionnaire and Epworth sleepiness scale score were obtained.
Results: Thirty six patients (22 men) participated in this study. The patient's mean age was 57 ± 12 years and the body mass index was 25.4 ± 4.1 Kg/m2. The oral appliance reduced the AHI from 20.8 ± 12.9/h to 8.4 ± 5.1/h (p=0.000). Ten of the 26 patients with ≥50% reduction in AHI (39%) had zero advancement. The mean mandibular advancement was 1.7 ± 1.5 mm achieving ≥ 50% reduction in AHI in 72% of the patients. Twenty seven patients had an AHI < 10/h. Of the 21 patients with moderate-severe OSA, 17 had the highest decrease in the AHI in a manibular advancement ≤ 3 mm.
Conclusions: The monitoring of the subjective symptoms of the patient and the objective evolution in the AHI could minimize the mandibular advancement needed for the treatment of OSA.

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