

Oral appliance therapy reduces blood pressure in obstructive sleep apnea: a randomized, controlled trial

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Sleep. 2004 Aug 1;27(5):934-41.

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Study objective: To investigate the short-term effect (4 weeks) of oral appliance therapy for obstructive sleep apnea on blood pressure.

Setting: Multidisciplinary sleep disorders clinic in a university teaching hospital. **PATIENTS:** Sixty-one patients diagnosed with obstructive sleep apnea on polysomnography (apnea hypopnea index ≥ 10 per hour and at least 2 of the following symptoms--daytime sleepiness, snoring, witnessed apneas, fragmented sleep; age > 20 years; and minimum mandibular protrusion of 3 mm).

Intervention: A mandibular advancement splint (MAS) and control oral appliance for 4 weeks each.

Measurements and results: Polysomnography and 24-hour ambulatory blood pressure monitoring were carried out at baseline and following each 4-week intervention period. Patients showed a 50% reduction in mean apnea hypopnea index with MAS compared with the control and a significant improvement in both minimum oxygen saturation and arousal index. There was a significant reduction with the MAS in mean (\pm SEM) 24-hour diastolic blood pressure (1.8 \pm 0.5 mmHg) compared with the control ($P = .001$) but not in 24-hour systolic blood pressure. Awake blood-pressure variables were reduced with the MAS by an estimated mean (\pm SEM) of 3.3 \pm 1.1 mmHg for systolic blood pressure ($P = .003$) and 3.4 \pm 0.9 mmHg for diastolic blood pressure ($P < .0001$). There was no significant difference in blood pressure measured asleep.

Conclusion: Oral appliance therapy for obstructive sleep apnea over 4 weeks results in a reduction in blood pressure, similar to that reported with continuous positive airway pressure therapy.