

# Short-term Effects of Prosthetic Mandibular Advancement on Glycemic Control in Diabetic Patients with Obstructive Sleep Apnea Syndrome

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## Abstract

The association between obstructive sleep apnea syndrome (OSAS) and glucose intolerance has been reported in previous study. However, the effects of prosthetic mandibular advancement (PMA) on blood glucose levels and insulin resistance remain unclear. The objective of this study was to investigate the short-term effects of PMA on glycemic control in type 2 diabetes mellitus (T2DM) patients with OSAS. Thirty-four T2DM patients were diagnosed with OSAS based on a two-channel (airflow and SpO<sub>2</sub>) portable sleep apnea monitor. These patients were divided into two groups: 18 patients who underwent PMA (Group 1) and 16 patients who were unable to undergo PMA (Group 2). In Group 1, a significant difference was observed in the respiratory disturbance index obtained before and after using the PMA (baseline, 17.7 ± 9.8; with PMA, 8.3 ± 7.7,  $p < 0.001$ ). The usage of the PMA caused significant improvements of the changes in fasting blood sugar levels after two days and HbA1c levels from those of the baseline levels after one month and three months from those of the baseline levels (baseline, 8.3 ± 1.4%; after one month, 7.6 ± 1.2%; after three months, 7.3 ± 1.1%, respectively,  $p < 0.05$ ). Our results suggest that PMA may have an effect on glycemic control in T2DM patients with OSAS.

**Key words:** Obstructive sleep apnea, Prosthetic mandibular advancement, Type 2 diabetes mellitus, Glucose intolerance, Apnea-hypopnea index