

Tongue measurements may help dentists determine oral appliance therapy success for sleep apnea

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According to new research that will receive the Graduate Student Research Award on Saturday, June 5, at the 19th Annual Meeting of the American Academy of Dental Sleep Medicine, the ratio between tongue volume and bony enclosure size in patients with obstructive sleep apnea (OSA) may help dentists calculate oral appliance treatment success.

Although mandibular advancement splints (MAS) have been shown to be a safe and effective treatment for OSA, predicting efficacy in individual patients is problematic.

The researchers assessed whether anatomical factors such as craniofacial size, upper-airway soft tissue volume, and/or the anatomical balance between them, were associated with MAS treatment outcome.

The study included 49 OSA patients. Patients were at least 18 years of age and had mild to severe [sleep apnea](#). They were without other [sleep disorders](#) or serious comorbid medical or [psychiatric disorders](#).

Each patient was fitted for a custom two-piece MAS, which was worn during sleep. Treatment outcome was assessed by [polysomnography](#) after approximately six weeks of oral appliance therapy.

Of the 49 patients, 24 responded to the treatment, demonstrating an apnea-hypopnea index (AHI) reduction of 50 percent or more. [Body](#)

[mass index](#) and age did not differ between responders and non-responders, but responders did have a lower baseline AHI, indicating that their sleep apnea was less severe before treatment.

Tongue cross-sectional area (CSA) was measured in a subset of 28 patients, including 12 responders and 16 non-responders. The measurements were taken using cephalometric soft-tissue imaging. Responders had a larger tongue CSA than non-responders, but there was no difference in the bony oral enclosure CSA. The ratio of tongue to bony enclosure CSA significantly differed between responders and non-responders, indicating the ratio as a significant predictor of response to treatment.

Because patients who responded to MAS treatment had a larger tongue volume for a given oral cavity size, the researchers suggest that determining this ratio may help predict MAS treatment success.

"While this study re-affirms the difficulties in predicting OSA treatment response to mandibular advancement splints, responders seem to have a larger tongue volume for a given [oral cavity](#) site, suggesting that MAS may help correct anatomical imbalances," said lead author Whitney Mostafiz.

Provided by American Academy of Sleep Medicine

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