



## Obstructive Sleep Apnea and Mandibular Advancement Splints

Response to Ford et al. An alternative cause for long term changes with mandibular advancement devices. *J Clin Sleep Med* 2015;11:501.

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We thank Dr. Ford and colleagues<sup>1</sup> for their interest and commentary regarding our article<sup>2</sup> detailing the occlusal changes associated with long-term use of mandibular advancement splints (MAS). We also are thankful for the opportunity to clarify what is a common misconception regarding these associated dental changes.

As described in their letter, it is a usual clinical finding for patients to feel some muscle fatigue and difficulty fully occluding their teeth in the morning following a night of MAS use. This is especially true if patients are new to this form of therapy, and this feeling fades within a few hours. However we do believe that the changes we reported are in fact due to the teeth moving orthodontically within the bone, and this position is well supported by the available literature.

While it is true that the dental casts in our study were not mounted into centric relation on an articulator, they were all orthodontically trimmed to a wax bite taken in centric occlusion. Previously, Marklund has reported no significant changes between centric relation and centric occlusion with MAS use.<sup>3</sup> Regardless, the appropriate method to distinguish dental movement from “an irreversible anterior mandibular position” is with radiographic imaging. Such studies employing cephalometric analysis of MAS treatment consistently demonstrate the forward movement and proclination of the mandibular dentition, while the maxillary teeth are tipped posteriorly.<sup>4-7</sup> Pointedly however, similar changes in the forward position of the mandible are not observed. Robertson described the occlusal changes of 100 patients (age  $49 \pm 8.5$  years) over a period of up to 30 months, stating that occlusal changes can be attributed to appliance-induced dental changes and not forward mandibular repositioning.<sup>6</sup> Rose in an examination of 34 patients (age  $52.9 \pm 9.6$  years) after an average of 30 months of MAS treatment found significant alterations in the occlusion, but no skeletal changes in the position of the mandible were noted.<sup>5</sup> Similarly, Hammond noted no change in mandibular position in 64 adult patients who had been using MAS on average for 25 months, stating neither an orthopedic effect nor a functional adaptation from prolonged MAS use was observed.<sup>7</sup>

Our research team is currently finalizing work on a study investigating the cephalometric changes associated with long-term (+10 years) MAS use of a similar population, the results of which will be forthcoming. We believe that such an

examination will help to confirm the conclusions drawn from these previously published shorter-term studies.

As MAS use becomes increasingly popular with an ever-wider range of OSAS patients, the treating clinician should be well aware of the expected occlusal changes which are irreversible in the absence of corrective orthodontic treatment. However we believe that for the vast majority of patients, the health benefits and improved quality of life afforded by MAS treatment of their OSAS far outweigh the inconvenience of these noted dental changes.

### CITATION

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### SUBMISSION & CORRESPONDENCE INFORMATION

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## DISCLOSURE STATEMENT

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