

Letters From Our Readers

To: Editor, *The Angle Orthodontist*

Re: Effects of long-term occlusal hypofunction and its recovery on the morphogenesis of molar roots and the periodontium in rats. *The Angle Orthodontist* 2013(4) 597–604

I would like to express my congratulations to the authors for publication of this article reporting the effects of long-term hypofunctional occlusion and its recovery on the morphology and PDL structure of rat molar roots.

Various approaches have been used previously to create hypofunctional occlusal conditions in animals: extraction¹ or occlusal reduction² of the antagonist teeth, bite opening with composite resin on the occlusal surface of molars,³ or placing a metal cap on the incisors.⁴ The latter was used in this study because it is reversible for occlusal function attenuation and recovery. However, was this method truly effective to create hypofunction of the molars? How far apart vertically was the separation between the molars and did that distance change over the 11 week observation period? Though the molars were separated, the gap may have been smaller than the diameter of the powder diet. As the incisors were covered with the cap, the rats would have no other way but to crush all the hard powders using their molars. Consequently, the first molar might still have been subjected to considerable mechanical stimulation during mastication.

Interestingly, it was found that only the mesial root of M1 was significantly smaller in the hypofunctional group. The authors concluded that the mesial root was mainly affected by hypofunction, which could be due to its larger size. However, it could also perhaps be due to

the “wedge-shape” of this hypofunction model. Figure 1(c) shows that opposing molars are more separated mesially. Therefore, there would be less mechanical chewing stimulation mesially. Although the tooth is a rigid object, the stress on the distal root would be larger than that on the mesial root if the force acted principally on the distal occlusal surface of the crown.

The other question I had was this: Was there a change in body weight in the hypofunction condition? Might this affect the normal remodeling of PDL, alveolar bone and even cementum around the molars?

Thank you again for your work in this area and for considering my thoughts on this topic.

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