

READER'S FORUM

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Immediate changes in the mandibular dentition after maxillary molar distalization using headgear.

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We would like to congratulate the authors for their publication. An unusual observation was excellently put forward by the authors that would catch attention of any vigilant student; however, a few points need further discussion.

Q1. Firstly, the selection of patients for intervention i.e. molar distalization with headgear was questionable. The modality of headgear for molar distalization is used in patients in early to late transition stage of the mixed dentition¹ but the authors selected post-pubertal females with age range of 16–20 years. The FMA readings showed that the patients had hyperdivergent growth pattern which showed a contra- indication for use of cervical headgear.

Q2. Secondly, the change in inclination of molars averagely by 9.7° (with a large standard deviation) contributes to much of the distalization observed as the landmark used for the determination of molar distalization, mesiobuccal cusp tip, is much amenable to change subsequent to the changes in molar inclination. The literature presents other methods of molar movement determination. A point in middle of the molar roots (bodily movement) along with a point on the mesiobuccal cusp tip (tipping) can be taken and

subsequent superimposed to appreciate the change in the position that would be the sum of changes due to bodily movement and tipping.² Centre of the molar crown can also be taken.³

Q3. As discussed by the author changes in mandibular dimensions was attributed to maxillary molar distalization and extrusion but the *p*-value indicated that the change in maxillary molar extrusion was not statistically significant (*p* = 0.087). Maxillary arch dimensional changes (maxillary premolar width, canine width and incisor inclination) and the post treatment cephalometric analysis were not presented by the author even though they might have added valuable information.

Q4. The changes in mandible following rapid palatal expansion (RPE) could not be compared with molar distalization using headgear as the two modalities have very different effects on maxilla.⁴

Q5. Lastly, the extraction of second molar which is frequently undertaken for first molar distalization cannot be strictly considered as a non-extraction treatment.

Questioned by

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We are pleased to have this opportunity to discuss our research. We hope this healthy discussion would be helpful to the readers of the Journal.

A1. As mentioned in our paper, the purpose of the use of headgear in post-pubertal female patients was distalization of molars as an alternative treatment option instead of mini-screws. However, in our practice, mini-screws are not the first choice for molar distalization in those who require distalization of the third molar. In such a case, a cervical headgear is used regardless of skeletal pattern. However, in hyperdivergent patients, we move the molar more distally than required to compensate of the tooth tipping.

A2. Thank you for your kind comments. The midpoint of the molar roots and center point on the crown can be used for molar movement. However, the errors of landmark identification must be considered as well. We used the mesiobuccal cusp tip because of the reliability of the landmark identification.

A3. Although it was not statistically significant, the maxillary molar was extruded 0.7 mm. According to the equilibrium theory,⁵ alterations in the oral environment related to the use of a headgear might be contributing factors to spontaneous mandibular widening. In addition, this study was intended to evaluate the effect of using a headgear without any orthodontic tooth movement. Thus, post-treatment results were not included in the study. Thank you for your kind suggestions.

A4. In the previous study that evaluated the effects of RPE, patients who underwent treatment with bonded RPE showed greater molar expansion in an untreated mandible than those treated with a bonded RPE group.⁴ This result indicates that the occlusion in the mandible may follow maxillary occlusion through occlusal intercuspation. In the same manner, the mandibular occlusion in our study is

thought to follow the maxillary occlusion as the maxillary arch width increased after the use of the headgear.

A5. We agree with your comment. Prior to the extraction of the second molar, the size, angulation, and vertical position of the third molar should be thoroughly evaluated.

Replied by

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