Letters to the editor*

Vertical dimension of the face: Result of four premolar extractions or posterior teeth position

We have read and discussed with great interest the article entitled "Effect of orthodontic treatment with four premolar extractions compared with nonextraction treatment on the vertical dimension of the face: A systematic review" (Kouvelis G, Dritsas K, Doulis I, Kloukos D, Gkantidis N. Am J Orthod Dentofacial Orthop. 2018; 154:175-87), in which the authors searched for scientific evidence of the relation between the 4 premolar extractions during orthodontic treatment and variations on the vertical dimension of the face.

In this systematic review, the authors based their strategy of research and evaluation of selected studies on orthodontic treatment with 4 premolar extractions and vertical cephalometric dimensions (ie, SN-GoGn, FMA, ANS-ME) obtained before and after orthodontic treatment. The conclusion was that "an extraction treatment protocol aiming to reduce or control the vertical dimension does not seem to be an evidence-based clinical approach."

However, in patients who had orthodontic treatment not associated with orthognatic surgery, vertical cephalometric alterations indicate rotation in the mandibular plane,[1] resulting from vertical or mesiodistal movement of upper and inferior molars.[2] Acknowledgment of the relevance of molar position can be seen in the clinical studies included in the systematic review, which described mesial movement (8 studies) and extrusive movement (4 studies) of such teeth after treatment with premolar extractions.

Thus, in treatment protocols for hyperdivergent patients, whose vertical skeletal dimensions are critical in treatment planning, the orthodontist must pay attention to, among other things, the mesiodistal and vertical positions of the posterior teeth during the treatment. Indication for teeth extractions must be considered as an auxiliary means of obtaining space in the dental arches, aiming to reach proper alignment of the teeth[3] or control the inclination of mandibular incisors,[4] both crucial elements to improve facial esthetics.

Full control of tooth movement and reduction of collateral effects on other teeth promoted by temporary anchorage appliances[5] have made extractions unnecessary in some treatments, increasing the relevance of comprehending the role played by molar position in the vertical dimension of the face when planning and executing orthodontic treatment.

Therefore, we think that a systematic review could be more effective in identifying the factors related to vertical facial alterations if done through the analysis of studies evaluating the variations in the position of posterior teeth during orthodontic treatment instead of whether or not there were 4 premolar extractions.

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Authors' response

We highly appreciate the interest of our colleagues in our study. The purpose of our review[1] was to assess the clinically relevant outcomes related to the vertical dimension of the face as affected by extraction versus nonextraction treatment protocols. The authors of the letter suggested that the review should have focused on the evaluation of anteroposterior and vertical molar movements due to treatment and growth and not on the effects on the vertical dimension of the face.

They support their view on non–evidence-based opinions, and thus their concerns are not well grounded.

*The viewpoints expressed are solely those of the author(s) and do not reflect those of the editor(s), publisher(s), or Association.

In the studies included in our review, a greater mesial movement of the posterior teeth is expected in all extraction groups, compared with nonextraction, because no specific anchorage measures were taken in any of the studies to avoid this. Indeed, although this was outside the scope of our review, it was verified by studies included in our review[2-6] as well as by a study cited by the authors of the letter.[7] All of these studies did not identify any effect in the vertical dimension of the face, despite the differential mesial molar movement in the compared groups. The vertical molar movement was not tested in most of the studies and was not assessed in our review because in our opinion the clinically relevant outcome regarding the decision for extractions is the vertical dimension of the patient's face and not the vertical molar position.

Based on the above considerations, we argue that a systematic review as the one suggested in the letter would still lead to conclusions that are similar to ours and would not add any further knowledge on the topic. However, if the authors insist on their subjective claims and think that such a review would be useful, they are always free to perform it themselves.

With kind regards,

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Determining condylar bone density in adolescents: An inconclusive cone-beam computed tomographic study

In an article in the September issue of the journal, Kim et al attempted to determine the condylar bone density in different age groups and various skeletal patterns. (Kim KJ, Park JH, Bay RC, Lee MY, Chang NY, Chae JM. Mandibular condyle bone density in adolescents with varying skeletal patterns evaluated using cone-beam computed tomography: A potential predictive tool. Am J Orthod Dentofacial Orthop 2018;154:382-9). We appreciate the efforts of the authors and thought it was a great attempt to explore some unknown findings about condylar bone density, but certain points need to be addressed.

As mentioned in the text, "The bone density of the mandibular condyle is affected by the functional pressure generated by the occlusion and the mandibular movements that are, in turn, influenced by the properties of the masticatory muscles and age." Also, "Skeletal pattern is thought to be closely related to occlusal force." Thus, the authors mentioned that age, sex, and occlusion type (Class I, II, III) affects the condylar bone density. But they do not mention confounding factors, which could alter the results of the study. For example, they did not mention the number of hyperdivergent, hypodivergent, or normovergent cases when the subjects were divided into Classes I, II, and III; the number of cases of hypodivergent subjects in Classes I and II might vary. Facial height ratio (which might be the actual factor responsible for variation of