Letters to the editor*

The influence of variables on predicting growth patterns of adolescents with varying skeletal patterns

The article "Mandibular condyle bone density in adolescents with varying skeletal patterns evaluated using CBCT: A potential predictive tool" (Kim K-J, Park JH, Bay RC, Lee M-Y, Chang N-Y, Chae J-M. Am J Orthod Dentofacial Orthop 2018;154:382-9) addresses some controversial issues in orthodontics that we would like to comment on:

In the discussion, the authors stated that bone density could be used to predict the growth pattern, because skeletal growth is influenced by bone metabolism.[1] However, they also mentioned that bone density of the mandibular condyle is affected by the functional pressure generated by the occlusion and mandibular movements.[2] How do the authors think that they could identify the influence of local factors on the values of bone density of the condyles and how could that compromise the analysis of growth prediction?

The determination of mandibular growth was made by the measurement of the ANB angle, which defines the anteroposterior relationship of the mandible with the maxilla in relation to the cranial base.[3] Because that measurement may be influenced by several factors, such as the anteroposterior and vertical positioning of point N,[4] the mandibular plane angle, and the rotation of the bone base,[5] would it, in the authors' opinion, be the most reliable instrument for such evaluation?

There is no consensus regarding the accuracy of the determination of the gray scales in cone-beam computerized tomography (CBCT). Studies have described that the correction methods of gray values obtained in CBCT still do not generate consistent values that are independent of the devices and their configurations or of the scanned objects.[6] One factor that might be related to the variability of the gray values in CBCT is the position held by the region of interest (specific area of measurement of density) inside the field of view (FOV). This variability occurred when density was determined in various places of a homogeneous structure and with more intensity when the same object was scanned repeatedly in different positions inside the FOV under the same exposure conditions.[7]

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Authors' response

Thank you very much for your interest in our article. We appreciate your insightful questions and valuable suggestion.

The mandibular condyle has a different microstructure than the other parts of the mandible, which may have different effects on the type or orientation of the force applied.[1] We could not confirm a correlation between the maximal occlusal force and the mean bite force. Because our study was cross-sectional, we could not confirm the change of condyle bone density over time in 1 subject. Further study might be necessary to answer this question.

ANB angle is the most commonly used skeletal classification in many studies.[2] Studies comparing ANB angle with other measurement methods have shown similar skeletal classification results.[3] Also, in

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

our study, subjects with a history of trauma to the dentofacial region, skeletal asymmetry, and general diseases were excluded. Therefore, it should be acceptable to use ANB angle.

In our study, the bone density of the condyle was measured with the use of CBCT, which is a common diagnostic tool in the dental field. The purpose of the study was to confirm the density pattern of condyle relative to skeletal pattern. Although CBCT is not appropriate for obtaining the absolute value of bone density, it is a good tool for differentiating between individuals with different skeletal patterns by measuring relative values. It might be interesting to use CBCT as a diagnostic tool for measuring bone density in future studies.[4]

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Survival rate of two orthodontic bonded retainer wires

We read the article "Clinical effectiveness of two orthodontic retainer wires on mandibular arch retention" (Gunay F, Oz A. Am J Orthod Dentofacial Orthop 2018; 153:232-8) with great interest. We congratulate the authors for conducting a robust study with an effective study design on this important topic. However, we would seek certain clarifications from the authors on several points:

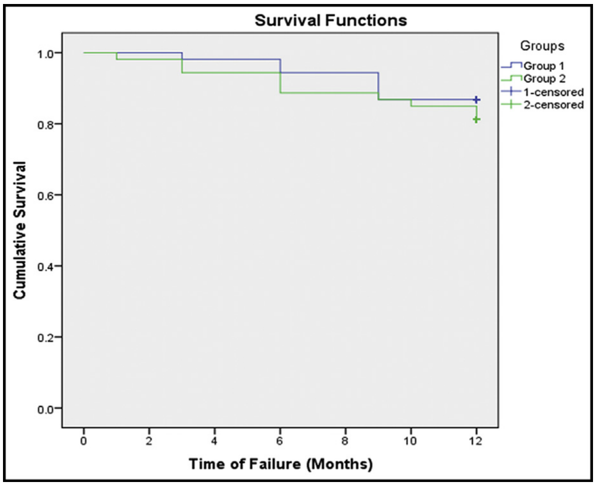

Fig. Kaplan-Meier survival curves for group 1 (0.0175-inch 6-stranded stainless steel retainer wire) and group 2 (0.0195-inch dead-soft coaxial retainer wire).

1. In paragraph 1 of the statistical analysis section, the authors mention that lingual retainer survival rates over 12 months were evaluated by means of the Kaplan-Meier test and that differences in retainer survival curves by retainer wire type were evaluated by means of the log-rank test. In Fig 3, the authors draw a Kaplan-Meier curve depicting the cumulative survival rates of group 1 (0.0175-inch 6-stranded stainless steel retainer wire) and group 2 0.0195-inch dead-soft coaxial retainer wire), but the graph touches zero percent in both groups over a 12-month follow-up period. This means that survival or success of the bonded retainer is 0% at the end of 12 months in both groups, although it is 86.8% in group 1 and 81.1% in group 2 according to Table II (log-rank test: $\chi^2 = 0.661$; $P = 0.416$). Figure 3 and Table II completely contradict each other. We think that the graph should be drawn as shown in Figure (Corrected).[1,2]
2. The authors applied repeated-measures analysis of variance (ANOVA) for irregularity measurements and intercanine distance. Intragroup comparison at different time points is mentioned, but what is the intergroup difference at different time points of the above parameters? In Tables IV and V, 2 different F-values are mentioned, and it seems that the authors have applied 1-way repeated-measures ANOVA separately for each treatment group and not repeated-measures ANOVA for