Authors' response

We appreciate the interest in our study, "Rate of tooth movement and dentoskeletal effects of rapid canine retraction by dentoalveolar distraction osteogenesis: A prospective study" (Am J Orthod Dentofacial Orthop 2017;152:204-13). Our responses to the authors' comments and questions are below.

Conventional orthodontic treatment relies on biologic tooth movement and can only be achieved at a limited rate. A technique using transport distraction osteogenesis was designed to reduce orthodontic and orthognathic treatment time. The dentoalveolar distraction (DAD) technique was introduced and used to achieve rapid tooth movement within the principles of distraction osteogenesis.[1]

Surgical technique is based on tooth extraction, removal of the buccal bone of the extraction socket, and complete horizontal and vertical osteotomies. The transport dentoalveolar segment includes the buccal cortex and the underlying spongious bone-enveloped canine root while leaving an intact lingual or palatal cortical plate.

Therefore, the DAD protocol is completely different from conventional biologic orthodontic tooth movement and includes distalization of the canine with its surrounding hard and soft tissues. According to the biologic principles, distraction osteogenesis begins with the development of a reparative callus that generates new bone under tension with gradual traction at the distraction site. Moreover, no gingival recession was observed in any study subject. This observation supported the findings of Gürgan et al,[2] who evaluated the alterations in gingival dimensions after rapid canine retraction using DAD at the 1-, 6-, and 12-month follow-up periods compared with pre-DAD. The authors found that the buccal sites showed no significant pocket depth changes, whereas the changes of pocket depth at the mesial and distal sites were insignificant at the 12-month follow-up. This clinical finding indicated that as the canine is moved within the alveolar segment, there will be minimal risk of harmful side effects on the marginal soft tissues and also to the supporting alveolar bone.[2]

Fixed orthodontic treatment was started immediately after the DAD procedure as mentioned in the "Material and methods" section of our article.

The anchorage loss finding is based on the statistical data of 36 canines in the DAD group by making measurements at the start and end of the DAD procedure (11.8 $\pm$ 1.3 days). No significant maxillary first molar tipping, vertical displacement, and mesial movement indicating anchorage loss were found in the DAD group (Table IV). It might be misleading to draw conclusions by looking at the intraoral pictures of the patient (Figs 5 and 6). Conventional fixed orthodontic treatment protocol and retention appliances were used for all study subjects.

Gökmen Kurt
Haluk İşeri
Reha Kişnişçi
Özkan Özkaynak
İstanbul, Ankara, and Antalya, Turkey

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Alveolar cortical bone

I read the article by Ohiomoba et al in the January issue and appreciated the accomplishment and results of this retrospective clinical study (Ohiomoba H, Sonis A, Yansane A, Friedland B. Quantitative evaluation of maxillary alveolar cortical bone thickness and density using computed tomography imaging. Am J Orthod Dentofacial Orthop 2017;151:82-91). The authors proposed to characterize alveolar cortical bone thickness and density in the maxilla and to explore patient factors that may significantly affect these bone properties. However, when I analyzed the sample exclusion criteria, I saw that only multiple missing teeth were considered. Why was not only 1 missing tooth considered, if we know that a missing tooth predisposes bone alterations in relation to bone characteristics (height, thickness, density)? Another point that I think is important is the age considered in the inclusion criteria. I believe that patients aged 12 years are too young to include in a sample to evaluate bone characteristics, because at that age osseous growth is happening, so this can influence the results in terms of bone formation in the regions, especially in relation to bone maturity and density.

Maria Perpétua Mota Freitas
Rio Grande do Sul, Brazil

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