

## READER'S FORUM

Hong RK, Lim SM, Heo JM, Baek SH

Orthodontic treatment of gummy smile by maxillary total intrusion with a midpalatal absolute anchorage system.

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Firstly, I would like to sincerely congratulate the authors and thank them for sharing an inspiring solution for a critical clinical situation. However, I have two major concerns.

**Q1.** In the lingual system, the force to the center of resistance of a tooth is different from that in the labial system. In the present case, the upper incisors tipped lingually after intrusion, as shown in the cephalometric superimpositions. I think that the intrusive force against the upper posterior teeth was applied lingually to the center of resistance, and, therefore, the upper posterior teeth tended to tip lingually as they were intruded. An excessive lingual tipping of the posterior teeth would enlarge the buccal corridor and, therefore, impair the smile esthetics. In addition, it would also impair the occlusal contacts on the lingual side. Moreover, an excessive lingual tipping of these teeth would result in the fenestration of alveolar bone on the buccal side due to excessive buccal tipping of roots. Did the authors consider these undesirable conditions during intrusion? Moreover, what measures did they adopt to prevent such excessive lingual tipping of the upper posterior teeth?

**Q2.** Intrusive tooth movement has a high risk of root resorption. It is encouraging that there was no marked root resorption in the present case after intrusion. Nevertheless, the results need to be interpreted with caution. Root resorption is a three-dimensional phenomenon, while panoramic radiographs are two-dimensional images and, hence, underestimate root resorption. Compared with panoramic radiography, cone-beam computed tomography (CBCT) could more precisely help to monitor patients at risk of developing severe root resorption during orthodontic intrusion.

*Questioned by*

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**A1.** Thank you very much for your interest in this article and also for the kind words. Please let us respond to the question raised concerning the lingual tipping of the upper teeth during intrusion. The transpalatal arch or lingual arch can be modified and placed to avoid increase the control over lingual tipping of the upper posterior teeth, which often occurs during lingual application of intrusive force to the posterior teeth. With these appliances, the active and reactive forces involved counterbalance each other during intrusion of the upper posterior dentition. In the present case, a modified lingual arch was placed and no lingual tipping of upper posterior teeth occurred. Postero-superior bodily movement of upper incisors also occurred. Nevertheless, slight lingual tipping of the upper posterior teeth can occur

occasionally, which is usually improved after achieving the maxillary total impaction.

**A2.** Root resorption is an important and relevant issue in this case. The introduction of CBCT creates the opportunity for clinicians to acquire the highest-quality diagnostic images. Due to further radiation exposure, however, CBCT is not taken routinely as a part of rou-

tine orthodontic patient records in my hospital and the current record generally consists of intraoral and extraoral photographs; periapical, panoramic, and cephalometric radiographs; and study models.

*Replied by*

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