

## READER'S FORUM

Ki Beom Kim, Renee E. Doyle, Eustáquio A. Araújo, Rolf G. Behrent, Donald R. Oliver, Guilherme Thiesen

**Long-term stability of maxillary and mandibular arch dimensions when using rapid palatal expansion and edgewise mechanotherapy in growing patients.**

- *Korean J Orthod* 2019;49:89-96

**palatal expansion from any other palatal expansion treatment such as bonded type or banded type palatal expansion?**

*Questioned by*

Seung-Youp Lee

*Department of Orthodontics, School of Dentistry, Chonbuk National University, Jeonju, Korea*

I appreciate the authors' work to investigate the long-term stability of maxillary and mandibular arch dimensions when using rapid palatal expansion and edgewise mechanotherapy in growing patients. This article would be valuable especially to the orthodontists who are interested in nonextraction maxillary constriction cases. For better understanding not only of mine but also of other readers, I would like to ask some questions.

The results presented in this study would be worthy to reassure clinicians as well as researchers.

**Q1. As you expanding maxilla with rapid palatal expansion in your article, it is obvious that maxillary and mandibular arch width dimensions are increasing. In your results, mandibular canine width was also increased. Although it is treated with followed edgewise mechanotherapy, mandibular canine width is almost maintained postretention period. How do you suppose this phenomenon?**

**Q2. When using Haas-type rapid palatal expansion, you suggested average of 3 months retention period. I guess that it is not so long period in 3 months retention. Is it somewhat different Hass-type**

We thank the reader for the interest on our article, "Long-term stability of maxillary and mandibular arch dimensions when using rapid palatal expansion and edgewise mechanotherapy in growing patients," published in the March 2019 issue of the Korean Journal of Orthodontics.<sup>1</sup>

**A1.** Regarding the mandibular post-retention stability, our results showed that most arch widths decreased significantly over the post-retention period, including the mandibular intercanine measurements. These occlusal changes were also described by previous studies that evaluated both untreated individuals and patients treated with palatal expansion and fixed mechanotherapy.<sup>2-5</sup> As pointed by the reader, the mandibular canine width "is almost maintained" in the post-retention period. But the mandibular canine widths were slightly reduced ( $-0.57 \pm 0.65$  mm and  $-0.42 \pm 0.75$  mm, at the centroid and lingual levels respectively; Table 1 from the article).<sup>1</sup> However, this reduction is much less than the reduction presented by untreated individuals, as we reported by applying z scores statistical analysis (Table 2 from the article).<sup>1</sup> And that is probably why the reader described that the mandibular canine width "is almost maintained". It is suggested in the literature<sup>6-8</sup> that a significant

maxillary palatal expansion may increase the stability of nonextraction approaches in the mandibular arch. However, we don't have a good answer yet.

**A2.** These patients were treated by Dr. Andrew J. Haas. The primary objective of expansion for these patients was to correct a dental crossbite, and his protocol was to retain 3 months.<sup>9</sup> Regarding the last question, we cannot make further comment about different expansion appliances since our study only evaluated the Haas-type palatal expander.

*Replied by*

Ki Beom Kim<sup>a</sup>, Renee E. Doyle<sup>b</sup>, Eustáquio A. Araújo<sup>a</sup>, Rolf G. Behrents<sup>a</sup>, Donald R. Oliver<sup>a</sup>, Guilherme Thiesen<sup>a,c</sup>

<sup>a</sup>Department of Orthodontics, Saint Louis University, St Louis, MO, USA

<sup>b</sup>Private Practice, Columbia, IL, USA

<sup>c</sup>Private Practice, Florianopolis, SC, Brazil

## References

1. Kim KB, Doyle RE, Araújo EA, Behrents RG, Oliver DR, Thiesen G. Long-term stability of maxillary and mandibular arch dimensions when using rapid palatal expansion and edgewise mechanotherapy in growing patients. *Korean J Orthod* 2019;49:89-96.
2. Moussa R, O'Reilly MT, Close JM. Long-term stability of rapid palatal expander treatment and edgewise mechanotherapy. *Am J Orthod Dentofacial Orthop* 1995;108:478-88.
3. McNamara JA Jr, Baccetti T, Franchi L, Herberger TA. Rapid maxillary expansion followed by fixed appliances: a long-term evaluation of changes in arch dimensions. *Angle Orthod* 2003;73:344-53.
4. Moyers RE, van der Linden FP, Riolo ML, McNamara JA. Standards of human occlusal development. Monograph 5. Craniofacial growth series. Ann Arbor: Center for Human Growth and Development, University of Michigan; 1976.
5. Massaro C, Miranda F, Janson G, Rodrigues de Almeida R, Pinzan A, Martins DR, et al. Maturational changes of the normal occlusion: a 40-year follow-up. *Am J Orthod Dentofacial Orthop* 2018;154:188-200.
6. Buschang PH. Maxillomandibular expansion: short-term relapse potential and long-term stability. *Am J Orthod Dentofacial Orthop* 2006;129(4 Suppl):S75-9.
7. Ferris T, Alexander RG, Boley J, Buschang PH. Long-term stability of combined rapid palatal expansion-lip bumper therapy followed by full fixed appliances. *Am J Orthod Dentofacial Orthop* 2005;128:310-25.
8. Vargo J, Buschang PH, Boley JC, English JD, Behrents RG, Owen AH 3rd. Treatment effects and short-term relapse of maxillomandibular expansion during the early to mid mixed dentition. *Am J Orthod Dentofacial Orthop* 2007;131:456-63.
9. Haas AJ. Palatal expansion: just the beginning of dentofacial orthopedics. *Am J Orthod* 1970;57:219-55.

This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/4.0>) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.