READER'S FORUM

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**Dentofacial transverse development in
Koreans according to skeletal maturation:
A cross-sectional study.**

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First of all, I would like to appreciate the efforts that the authors made to carry out such a great research. It was a very impressive article. I suppose this article would help many orthodontists in correction of transverse problems according to the developmental stages.

Q1. According to this article, the authors measured the most lateral points on the buccal surfaces of the permanent first molar crown to assess the intermolar width in the posteroanterior cephalograms (Fig. 1). But, I feel that the results from this approach would be significantly affected by inclination of the molars. In addition to what was discussed in the article, I would appreciate the authors' clarification in the area of the methods or landmark selection.

Q2. In Table 4, regarding the maxillary width and mandibular width, there was growth completion over 95% already after skeletal maturation index (SMI) 4 stage, which has been the stage the authors elected to intervene. From the standpoint of growth modification, wouldn't the remaining 5% growth be too small to have a successful adjustment? The authors' opinion would be appreciated on this point.

Q3. Also in Table 4, the growth of maxillary width was 95% to 96% completed in SMI stage 1-2 in females and SMI stage 4-6 in males. Accordingly, it was also mentioned that it would be better to expand the maxilla before these stages. In females, these stages would indicate relatively young age. Do the authors anticipate that, after these stages, rapid palatal expansion would yield unsuccessful outcome and miniscrew-assisted rapid palatal expansion (MARPE) or surgically-assisted rapid palatal expansion (SARPE) are more viable options?

Q4. In Table 5, there were no statistically significant differences in the measurements associated with the nasal width in females. In the meantime, the male patients showed some statistically significant differences. What is the authors' interpretation of this finding?

Questioned by

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We would like to thank your interest in this study and hope our answers help clarify for the readers.

A1. This study evaluated transverse parameters of the dentoskeletal region using posteroanterior radiographs. The focus of this study was primarily the maxillary and mandibular skeletal width which is well defined by the jugal process and antegonial notch.¹ We also wanted to include a dental component to this study and the lateral points of the first molar crowns, which are conventional

landmarks, were used because the posteroanterior radiograph typically shows much overlap in dental structures and this landmark is readily identifiable.²

In a previous study using cone-beam computed tomography images of Class I subjects, there were transverse discrepancies masked by dental compensation in the first molar region.³ Hence, evaluation of the molar inclination would be useful in studies using 3-dimensional images or dental casts. However, such evaluation is highly difficult and inaccurate using posteroanterior radiographs. Favorably, the standard deviations of the transverse parameters were low (Table 2) in this study which indirectly shows that the samples did not include extreme versions of hidden transverse discrepancies which would require dental compensation. Nevertheless, we believe that the molar inclinations could affect the transverse dental widths and would like to suggest that the results of this study should be interpreted with an emphasis on relative comparisons of maxillary and mandibular intermolar width as well as the maxillary-mandibular width difference values.

A2. We appreciate this comment and as mentioned, the growth completion percentage was close to 95% at SMI stage 4, which leaves 5% of growth remaining. Another point to consider is that the maxillary and mandibular width at SMI stage 0 was already above 90% which leaves 10% of growth. We have mentioned in the discussion section that the absolute time of growth completion was earlier than previously reported studies, which may be due to the individual growth variation that was inevitably included in this study.^{4,5}

Another point to consider is that, this study did not consider the maturation characteristics of the midpalatal suture. In a previous study, palatal suture maturation was categorized into 5 stages and fusion was observed in girls at 11 years of age while it was seen in less than 30% of boys between ages 14 to 17 years.⁶ In other words, in addition to the percentage in growth completion observed at a certain SMI stage from this study, the suture maturation would also play a significant role in growth modification and should be considered before treatment.

A3. This study suggested that the maxillary growth percentages for both males and females may be higher at earlier stages in skeletal maturation than anticipated

(SMI stage 4–6 in males and SMI stage 1–2 in females). Therefore, in cases of constricted maxillary arches in need of expansion using conventional rapid palatal expansion, earlier intervention was recommended according to the results of Table 4. However, as mentioned before, consideration of the palatal suture maturation would also aid in selection of proper treatment timing. In cases of adolescents that have missed the optimal treatment timing for conventional rapid expanders, MARPE or SARPE appliances may certainly be the next treatment of choice to correct transverse discrepancies due to constricted maxillary arches.

A4. The nasal area is important in terms of respiratory function and is affected by rapid palatal expansion, which should be considered during dentofacial orthopedic treatment.⁷ In this study, the nasal width showed a low to moderate correlation with different transverse parameters in males. In particular, there was a moderate correlation between the nasal and maxillary width in males while in females, there was no significant correlation. The findings of this study may indirectly suggest that the nasal width in males should be monitored for significant change after rapid palatal expansion. As of differences between genders, this could be due to the sample used in this study and also the individual variations in growth. Further evaluation of gender differences in the nasal area is recommended for future longitudinal studies.

Replied by

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