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Letter to the Editor

Comments regarding: Pereira SA, Lopez M, Lavado N, Abreu JM, Silva H. A clinical risk prediction model of orthodontic-induced external apical root resorption. *Revista Portuguesa de Estomatologia, Medicina Dentária e Cirurgia Maxilofacial* 2014;55(2):66-72



Comentários sobre: Pereira SA, Lopez M, Lavado N, Abreu JM, Silva H. A clinical risk prediction model of orthodontic-induced external apical root resorption. *Revista Portuguesa de Estomatologia, Medicina Dentária e Cirurgia Maxilofacial* 2014;55(2):66-72

Dear Editor-in-Chief,

I read with keen interest the article by Sónia Alves Pereira et al. in the June issue, "A clinical risk prediction model of orthodontic-induced external apical root resorption" (Pereira SA, Lopez M, Lavado N, Abreu JM, Silva H, *Revista Portuguesa de Estomatologia, Medicina Dentária e Cirurgia Maxilofacial* 2014;55(2):66-72), studying the role of nine clinical variables in the susceptibility to external apical root resorption and introducing an integrative model which could predict this orthodontic-induced complication. I admire the authors for their novel work and they need to be appreciated for their thorough work on 212 patients, but I have some concerns regarding the equations presented in this study for measurement of the actual root resorption in serial X-rays.

The authors measured the induced root resorption by means of initial and final panoramic radiographies. They have accurately stated that "during orthodontic treatment the crown length does not change", and "magnification factor of panoramic radiographs are relatively constant in vertical axis." Authors have used the crown lengths as reference to calculate the enlargement factor among radiographs in order to determine the corrected final root length, precisely.^{1,2} The authors defined some variables for this matter: initial root length (R1), initial crown length (C1), final root length (R2),

final crown length (C2), correction factor (CF) and corrected final root length (CR2); and calculated the root resorption using the following mathematical formulations by means of a well-designed software:

$$\begin{aligned} CF &= C1/C2 \\ CR2 &= R2/CF. \end{aligned}$$

My concern is that the correction factor (CF) is the ratio of the initial crown length (C1) to the final crown length (C2). Thus, in order to calculate the corrected final crown length (CC2), which is theoretically equal to C1, C2 must be multiplied by the correction factor (CC2= C2*CF= C1). The same logic applies to the root and it is understandable that in order to report the corrected final root length (CR2), its value (R2) must be multiplied with CF. Therefore, the applied equation would be CR2= R2*CF instead.

However, in the presented methodology of this research at page 68, the R2 value is divided by the CF.

The researchers acquired excellent data in this study and interpreted them clearly to generate the integrative model. Although the presented formulation is not correct at materials and methods section, it is applied properly on acquired data at Table 1 and reported percentiles of root resorptions are correct. I believe that data in this study could be very useful

but readers must be aware of this miss-representation of the formula at previous section.

Sincerely,

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2. Wyatt D, Farman A, Orbell G, Silveira A, Scarfe W. Accuracy of dimensional and angular measurements from panoramic and lateral oblique radiographs. *Dentomaxillofacial Radiology*. 1995;24:225-31.

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