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## Impacted maxillary canine orthodontic traction and incisor root resorption

Regarding the article entitled “Influence of impacted maxillary canine orthodontic traction complexity on root resorption of incisors: A retrospective longitudinal study” in the January 2019 issue by Luis Ernesto Arrilola-Guillen, Gustavo Armando Ruiz-Mora, Yalil Augusto Rodriguez-Cardenas, Aron Aliaga-Del Castillo, Mariana Boessio-Vizzotto, and Heraldo Luis Dias-da Silveira (*Am J Orthod Dentofacial Orthop* 2019;155:28-39), the authors clearly revealed that incisor root resorption is not dependent on the severity of canine impactions.

The study was described in the title and the text as a “retrospective longitudinal study.” Retrospective studies use records that are available from the past. The records may be collected in a longitudinal manner by following for a period of time or at a particular point of time. Even if the records were collected by following the sample in the past, the present investigator who is analyzing the past records cannot control the factors as needed and might have to go for a compromise according to the sample available. Longitudinal studies are done by the investigator who can control all the factors. Therefore, I am of the opinion that the words retrospective and longitudinal should not be combined, because doing so leads to confusion for the readers regarding the type of the study. In the existing literature of classification of studies, there are no words coined for studies that are done on past records collected by following the sample for particular period. To avoid confusion, a new word should be given to studies that are done on past records that are collected by following the sample.

Maxillary canines that are impacted are considered to be favorable when they don't impinge on the incisors or when the biomechanics used will allow the canine movement without impinging on the adjacent teeth. Because the authors used treated cases of canine impactions, it is possible that all were favorable canine impactions that might not cause resorption of incisors. All of the unfavorable canine impactions, which might cause root resorption of adjacent teeth, would be treated with the use of alternate treatment plans, such as extraction and replacement or closure of space by retraction of anterior teeth. So there was no chance for the authors to find resorption of adjacent incisors when they included treated cases of canine impaction for their research.

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## Authors' response

We are grateful for the interest that our recent study produced in the orthodontic community and we appreciate the opportunity to address concerns.

The first concern is related to the study design classification “retrospective longitudinal.” This kind of questioning is not new, even in *AJO-DO*.<sup>1,2</sup> A study that is done on past records collected by following the sample for a particular period has been usually called retrospective longitudinal by the scientific community.<sup>2-5</sup> Likewise, longitudinal research may take numerous different forms, including retrospective longitudinal studies as a variant. This variation could be used if participants in an identified cohort have already experienced events related to the interest variables. Then the data are collected and examined retrospectively.<sup>6</sup> As stated in the Material and Methods section of our study, CBCT images of 45 patients with maxillary impacted canines treated in a private orthodontic clinic were obtained before treatment and after canine traction, clearly stating the retrospective and longitudinal nature of the study.

Regarding the second concern, the question was raised whether only maxillary canines with favorable impaction were included, because if so, they might not cause incisor root resorption. We want to reinforce that the main objective of this study was to evaluate the influence of impacted maxillary canine orthodontic traction complexity on root resorption of incisors. Therefore, 2 groups were established according to the level of orthodontic traction treatment complexity: low-complexity group and high-complexity group. Specifically, the high-complexity group included patients with impacted maxillary canines in impaction sectors 3, 4, or 5 (ie, near to midline) according to the classification of Ericson and Kuroi.<sup>7</sup> In cases with canines in sector 3, only those impacted canines with  $\alpha$  angle  $>40^\circ$  (ie, with horizontal position tendency) were included. Clinically, these criteria demonstrate the proximity of impacted canines to the roots of the incisors and corroborate the initial complexity of this group. We do not agree that all unfavorable impacted canines that caused

root resorption of incisors or might cause resorption during traction should be extracted. It would depend on each specific case and on the biomechanics planned for their traction. Orthodontic traction of unfavorable impacted canines, which caused severe root resorption before treatment and were successfully tractioned, has been previously included, as well in a study that evaluated root resorption.<sup>8</sup>

We thank you for your comments and the opportunity to clarify and discuss them.

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## “Please don’t move”: Cone-beam computed tomography and obstructive sleep apnea hypopnea syndrome

We read, with great interest, the article entitled “Computerized measurement of the location and