

disagree that it was an “improper” method, but rather a matter of judgment about assessing this outcome in a way that is meaningful to patients and clinicians.

Regarding the other advantages of RM-GIC, it is correct that this was a matter of conjecture by the authors and may be the subject of future research.

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Importance of using platelet-rich plasma

An interesting article in the January 2019 issue contributes to the advancement of orthodontics because it helps us to understand if dental movement can be accelerated with the use of platelet-rich plasma, prostaglandin E₂, and others; it has not been demonstrated that there is any clinical treatment that accelerates tooth movement. The study, “Experimental investigation of effects of platelet-rich plasma on early phases of orthodontic tooth movement,” was carried out by Sibel Akbulut, Ahmet Yagci, Arzu Hanim Yay, and Betül Yalcin in Turkey.¹

The authors studied the acceleration and the force when moving teeth in laboratory rats. Certainly they controlled weight, sex, and type of feeding. Their sample was very small: 16 in each group divided into 4 subgroups according to evaluation period. This is a small sample from which to have a conclusion that allows some kind of external validity. Other authors are experimenting with an average of 40 rats, for example, Gudhimella et al² using 90 rats and Sugimori et al³ in 2018 using 50 rats.

On the other hand, it is known that the immediate effect of platelet-rich plasma occurs in the first 24 hours and the continuity of this stimulus will depend on the type of plasma used,⁴ the concentration of the same, and the anatomic site where it is applied; even so, its maximal effect will be noticed between 20 and 30 days,⁵ so the authors had to consider a minimum

study time of at least 30 days for the results to be the most beneficial.

Another point to be discussed in this article was that to accelerate the process of tooth movement they used platelet-rich plasma from other rats, that is, 6 extra rats from which they extracted blood to process the plasma. However, it is possible that when using plasma from other rats, the experimental rats did not achieve an adequate effect because the plasma did not have the same properties as their own might have had. This situation should be taken into account by readers to analyze the results with caution, and it deserves a comment from the authors to incorporate these control variables in future studies.

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Authors' response

Thank you for your comments on our article. We are happy to respond.

We used 4 rats in each subgroup. It is true that the larger the numbers, the greater the reliability of the study. However, we consulted a statistician before the study and determined that a power of 80% was achieved with 48 rats total and 4 rats in each subgroup. Power of 80% can be considered acceptable, and using more animals might be overuse and unethical.

We stated, “Biologic activity of growth factors was reported to last for 5 days, and 80% of the factor was reported to be released 24 hours after application and completed in 2 weeks. Therefore, 14 days is enough to

observe the early effects of PRP [platelet-rich plasma] on tooth movement." We evaluated the effects of PRP, and 14 days can be considered an acceptable duration. However, for orthodontic tooth movement and related animal model, 14 days might be considered a short duration. This study was designed as a preliminary study to observe the effects of PRP on tooth movement. We used 1, 3, 7, and 14 days to evaluate the effects of PRP; 30 days would also be beneficial, but we couldn't foresee the efficacy of PRP and avoided further use of 12 animals. Also, based on the results, we had considered designing further studies with longer durations. However, the present results, as far as we are concerned, did not exhibit clinical significance. A possible explanation might be as you stated, the nonautologous structure of the PRP, unlike in humans. Therefore, we decided not to perform further study.

Finally, we agree that using blood from other rats to obtain PRP restricts the biologic activity, which is the major advantage of the product. This is one reason for us not to continue to study PRP in rats.

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Age as a limiting factor for panoramic imaging in patients with ectopic maxillary canines

I have read with interest the article by Björksved et al (Björksved M, Magnuson A, Bazargani SM, Lindsten R, Bazargani F. Are panoramic radiographs good enough to render correct angle and sector position in palatally displaced canines? *Am J Orthod Dentofacial Orthop* 2019;155:380-7) on the reliability of panoramic radiographs in diagnosing palatally displaced canines. I agree that the treatment of palatally displaced canines in the mixed dentition can be initiated and performed with the information on canine location available by means of clinical examination and the sector location of the ectopic canine on panoramic radiographs.

However, an important concern arises regarding the mean age of the study participants, 13.4 years, at the

time of imaging. Normally in patients diagnosed with a retained primary canine at this age, all other permanent teeth but the third molars are fully erupted. Therefore, in most cases the panoramic radiograph is not needed for purposes other than diagnosing the position of the ectopic permanent canine. Björksved et al reported that in panoramic radiographs, sector location of impacted canines is only fair. On the other hand, the ectopic canine may have nearly completed travelling its altered path of eruption and possible root resorptions on adjacent teeth might not be diagnosed with the use of panoramic radiography. Cone-beam computed tomography (CBCT) provides precise information about location of the impacted canine and prevalence and degree of root resorption of adjacent teeth. This is of great importance for surgeons and orthodontists to provide a detailed diagnosis and an accurate interdisciplinary treatment plan.^{1,2}

Compared with the diagnostic information available from a panoramic radiograph, dose-reduced small-field CBCT (4 × 4 cm) may have several benefits.

The low end of the CBCT dose range overlaps with the range found with panoramic radiography.³ Using small fields of view and altering tube potential and current for the 360° rotation protocol, assessment of periodontal structures can be performed with a smaller dose without substantially affecting visualization.⁴ There is great potential for dose reduction through mA with a minimal loss in image quality,⁵ and CBCT scanners can be optimized by using of the highest kV along with the shortest exposure time and a task-specific mA.⁶

Because there is only 1 small area of interest in these cases, a field of view of 4 × 4 cm may be sufficient. When using small fields of view and dose reduction the effective dose for the 3-dimensional CBCT machines may be lower or equal to the effective dose of conventional panoramic or even digital units.⁷

Ectopic permanent canines located in sectors 3, 4, and 5 (nomenclature according to Lindauer⁸) are strong indicators for possible root resorption on adjacent teeth.^{2,9-12} American Academy of Oral and Maxillofacial Radiology clinical recommendations and the European Sedentex CT and DIMITRA (Dentomaxillofacial Pediatric Imaging: An Investigation Towards Low-Dose Radiation-Induced Risks) guidelines support the need for CBCT imaging for the improvement of diagnosis and surgical and orthodontic treatment planning in these cases.¹³⁻¹⁵

Dose-reduced small-field CBCT imaging should be preferred to panoramic radiographs in the early permanent dentition if the only reason for imaging is exploration of the position of an ectopic canine.