

# Editor's choice

David L. Turpin, Editor-in-Chief

## Detection of apical root resorption after orthodontic treatment by using panoramic cone-beam computed tomography of super-high resolution

Alexander Dudic, Catherine Giannopoulou, Michael Leuzinger, and Stavros Kiliaridis

At first glance, this article might seem to suggest that we've solved the problem of root resorption by using cone-beam computed tomography (CBCT) early in treatment, when alterations in the treatment approach would be beneficial. But is it that simple? For starters, the 3-dimensional images used in this study are much smaller than other CBCT scans; thus, the image is much "finer" than those more commonly used. It is well known among users that you cannot see much of the apical third of the root on any big CBCT scans, despite manufacturers' claims.

The authors defined the control variable as the cone-beam analysis for identifying apical root resorption. With its superior 3-dimensional imaging capabilities, this is well justified. The panoramic radiograph then becomes the "experimental" diagnostic image. The authors sought to determine whether a panoramic radiograph is adequate for detecting apical root resorption. Compared with cone-beam images, panoramic radiographs are less sensitive tools for detecting root resorption. That finding should not be surprising, because one would expect to find more root resorption with higher-quality imaging. But another, more serious question remains. Which is a greater health risk: unrecognized mild or moderate root resorption or a significant increase in exposure to ionizing radiation? The added cost and the health risk from the increased radiation exposure of CBCT examinations make it difficult to justify their routine use for detecting root resorption. For these reasons, this research team suggests that CBCT imaging should be used in research studies and clinics to help monitor high-risk patients proven to be prone to severe root resorption during orthodontic tooth movement.

## Friction and resistance to sliding in orthodontics: A critical review

S. Jack Burrow

For every orthodontist wondering whether changing to a new appliance will actually reduce treatment time, here is an article about friction that you will be able to understand. According to Jack Burrow, "Despite the emphasis it now receives in the marketing of self-ligating brackets, friction is not the major component of resistance to sliding in clinical treatment." The binding of the wire against the corners of the bracket soon after tooth movement begins is much more important, as is the notching of the archwire that temporarily stops movement. Continues Burrow, "Clinical studies support the view that resistance to bodily tooth movement by sliding has little to do with friction and, instead, is largely a binding-and-release phenomenon that is about the same with conventional and self-ligating brackets. The limited clinical trial data now available do not support the contention that treatment time is reduced (presumably because of lower friction) with self-ligating brackets."

The purpose of this article was to evaluate friction in the context of resistance to sliding brackets along an archwire or an archwire sliding through brackets. Although this short article is not an experimental study, this kind of clarification is long overdue. Overall, the article is both timely and topical for orthodontists. This view of binding as expressed by Burrow, however, ignores the effects of bracket slot angulation, as well as differing wire sizes and ligature materials. Binding force is not a constant for a bracket-archwire-ligature system (unlike classical friction) but depends on the state of the system. At the same time, manufacturers of self-ligating brackets offer claims of "reduced frictional resistance and reduced treatment time" when marketing new appliance systems as a reason for using them. To some degree, all have "cherry picked" the research data to support their own contentions. I think you'll feel enlightened with the content of this article.

## Development of occlusal traits and dental arch space from adolescence to adulthood. A 25-year follow-up study of 245 untreated subjects

**Teitur Jonsson, Sigurjon Arnlaugsson, and Sigurdur Runar Saemundsson**

When examining a new patient, are you ever asked whether a malocclusion trait or characteristic will correct itself or simply worsen with age? For instance, if a person has an excessive overjet and mandibular anterior crowding, will these problems get better or worse with age if nothing is done? And what about the person with maxillary anterior spacing or increased overbite? What do we know about the odds of significant changes in the long term with these traits of malocclusion? If you want some insight based on real data, continue reading.

I believe this is a landmark epidemiologic longitudinal study of occlusal traits of vital interest to orthodontists. To the authors' credit, it was carried out in a straightforward manner, and the report was well written. The statistics are sound, and the conclusions are justified and useful. As noted by reviewer Sheldon Peck, "I have never before in my career as a reviewer had reason to give top scores in all criteria to any paper.

This paper should be accepted immediately for publication. Bravo!"

This Icelandic sample comprised 245 adolescents examined clinically in the late mixed or permanent dentition and again 25 years later. All subjects were untreated, and all had a full complement of teeth at both examinations. With the data fully accounted for and the last statistical test completed, you might find that what you tell your patients needs some revision. Self-correction of malocclusion traits and spacing anomalies was frequently observed in the untreated subjects of this study. Maxillary anterior spacing and crowding, mandibular anterior spacing, and excessive overjet improved spontaneously in most subjects. Other traits, such as excessive overbite and distal molar occlusion improved in about 1 of every 2 subjects. On the other hand, deterioration of normal occlusal traits and space relationship was uncommon, except for mandibular anterior crowding. After studying these findings, will you be as quick to assure your next patient that overjet or maxillary spacing will worsen if he or she does nothing? Of course, you are also justified in letting the patient know the mandibular incisors will continue to crowd. Overall, noted the authors, "When the high ratio of self-corrected traits was weighed against the limited opposite changes in the larger normal group, the numbers of positive and negative converts were balanced. The changes were small and not significant."