in those parameters can easily burnout existing structures and affect the outcome of the study.

We hope that our remarks will be implemented in further studies.

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Author's response

We thank Drs Brezniak and Wasserstein for their comments. They raise three methodologic questions concerning the validity of our results and express some concern about our conclusions and their future ramifications.

1. As we mentioned in the discussion, a method based on 2-dimensional x-ray for diagnosis of periodontal status is not optimal. A cone-beam computed tomographic (CBCT) scan can provide better accuracy, but because the radiation dosage of 2 CBCT scans (one at the beginning and another at the end of treatment) is not negligible, we could not ethically justify adding an extra imaging technique. To enable a valid comparison between the treatment and control groups, we set the threshold to 1 mm of difference in the cementoenamel junction–interdental alveolar crest distance. Regarding the question of reliability of bitewing radiographs due to possible angular differences, a bitewing radiograph taken with the use of a film holder is considered to be reliable.[1] If anything, bitewing radiographs tend to underestimate the loss of alveolar crestal bone.[2] In addition, because the bitewing in both treatment and control groups were taken with the use of the same technique, angular differences, if they existed, would have had the same effect in both groups.
2. In general, the active orthodontic treatment has 3 main stages: leveling and alignment, the working stage, and the finishing stage. Indeed, tooth movement creates local inflammation which influences the mineralization/demineralization of the interdental alveolar crest and mineralization of bone matrix and can continue for weeks after tooth movement has ended. Because most of the tooth movement is achieved in the first 2 stages of treatment, we assumed that changes of the interdental alveolar crest level after the treatment were negligible in comparison.
3. Although different exposures to the x-ray might change the image on the radiographs, standard E-speed bitewing films were used and the radiographs were taken according to the guidelines of the medical corps to standardize the radiation exposure.

The patients in the treatment/control group were not referred to a periodontist for periodic examination during the treatment, and therefore the benefit of a periodic periodontal examination was not tested in our study.

As for the main concern regarding the conclusions, we explicitly stated that the difference between the orthodontic patients and the control subjects did not reach statistical significance: "Twenty-two patients (65%) from the treatment group and 10 patients (34%) from the control group had an increase in the cementoenamel junction–interdental alveolar crest distance of >1 mm in at least 1 site, with borderline significance between the groups ($P = 0.079$)." One should remember that a significance of $P = 0.079$ means that there is a $>92\%$ confidence that the difference between treatment group and control group is not random. Thus, an effect size of nearly 2-fold along with borderline significance is important enough to emphasize to orthodontists. The orthodontist must be vigilant for signs of periodontal deterioration during treatment and monitor the periodontal status during adult orthodontic treatment. A diagnosis of periodontal deterioration during orthodontic treatment is important and might change the treatment goals or at least should alert the orthodontist to halt the active treatment temporally and refer the patient to a periodontist.

In retrospect, we should have worded our conclusions more carefully. The phrases that Drs Brezniak and Wasserstein were concerned about represent our interpretation of the trend that we observed, and we agree that it would have been more conservative to express them in the discussion. We hope that larger studies that will have better statistical power will enable a more clear-cut conclusion to the issue at hand.

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