
Article:
Benson, P. orcid.org/0000-0003-0865-962X, Alexander-Abt, J., Cotter, S. et al. (6 more authors) (2019) Authors' response. American Journal of Orthodontics and Dentofacial Orthopedics, 156 (1). pp. 6-7. ISSN 0889-5406

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Re - Resin-modified glass ionomer cement v composite for orthodontic bonding; a randomised controlled trial

We had great interest in studying the article “Resin-modified glass ionomer cement vs composite for orthodontic bonding: A multicenter, single-blind, randomized controlled trial,”1 published in the January 2019 issue, in which the authors compared the use of resin-reinforced or modified glass ionomer cement (RM-GIC) with the use of a light-cured composite (LCC) resin when bonding orthodontic brackets. The article reports a randomized controlled multicenter study with 2 parallel groups (RM-GIC × LCC). Pre- and posttreatment photographic evaluations were made to identify demineralized lesions and the perception of how esthetics are compromised by them. Besides that, clinical records verified the number of first-time bond failures.

We find it important to discuss 2 of the conclusions. The authors report in the first affirmation that “There was no difference in the incidence of new demineralized lesions (DLs) in patients who received fixed orthodontic appliances bonded with either a light-cured RM-GIC or LCC.” However, there was no standard to follow in the methodology for the photographs, because they were taken with different digital cameras and different environmental and lighting conditions. Besides that, the examiners did not receive a standardized training to take the photographs. Therefore, it is possible for the examiners to identify and evaluate DLs in the sample, but not to make any statement about the incidence of DLs in it. It is known that to evaluate DLs, there is the need of a clinical evaluation with the tooth surface clean and dry, as recommended by the International Caries Detection and Assessment System.2

As for the last conclusion, in which the authors reported “potential advantages to using RM-GIC, including reduced sensitivity to moisture, reduced cleanup time, as well as lower environmental and cytotoxic impacts,” it is based on information described by previously published papers3, 4 and does not express an interpretation of the results of the study, because the chosen methodology was limited to evaluating failures after bonding orthodontic brackets with RM-GIC.

Despite having used the methodology in a satisfactory manner to compare RM-GIC and LCC efficacy when bonding orthodontic brackets, the fact that there was no standard procedure to take the photographs allowed them to be used only to evaluate how white spot lesions compromise esthetics, but not to identify the clinical incidence of those lesions. This fact can influence future studies that refer to the literature in search of information about the incidence of DLs in an improper manner.

References

1

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Reply:

We thank the reader for their interest in our article and for their comments. The International Caries Detection and Assessment System (ICDAS) is an index developed for detection and classification of caries (https://www.iccms-web.com/content/icdas). The full ICDAS scores range from 0 (sound enamel) to 6 (extensive distinct cavity with visible dentine). Therefore, the full range of scores can be used to assess the severity of dental caries over time. In our study we showed our assessors the before treatment and day of debond photographs and asked them to simply decide if any new lesions, that might be due to demineralisation during orthodontic treatment, were present or not. We used multiple assessors to improve validity. This equates to the ICDAS basic reporting tool of a dichotomous assessment (No obvious decay/Yes obvious decay). This assesses the true incidence of demineralisation (presence or absence of new lesions), but makes no attempt to determine severity. Severity was assessed using a separate subjective assessment of aesthetic impact by several clinicians and lay people, only after it was determined that new lesions were present.

In regard to the condition of the tooth surfaces, the before treatment photographs were taken only after oral hygiene was considered sufficient for fixed orthodontic treatment. The day of debond photographs were taken after removal of the appliances and cleaning of the tooth surface. Drying of the tooth surface might be important to improve the validity and reproducibility of the full ICDAS index scores indicating severity of lesions, however, this will tend to over-estimate the incidence of demineralisation. We decided to examine the tooth surfaces in the natural state (i.e. not air dried). We disagree that it was an 'improper' method, rather a matter of judgement about assessing this outcome in a way that is meaningful to patients and clinicians.

In regard to 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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