Reviewer’s report

Title: The Push-out Bond Strength of calcium silicate-based endodontic sealers

Version: 0 Date: 26 Apr 2018

Reviewer: Matthias Roggendorf

Reviewer's report:

The authors investigated the bond strength of 4 different root canals sealers by push-out analysis. Therefore they used 3 calcium silicate-based sealers Total Fill, Ende CPM, and BioRoot RCS) and one epoxy resin sealer (AH Plus) for comparison reasons. Root canals of 80 single-rooted teeth were obturated with one of the four sealers (n=20) and a gutta-percha cone using a single-cone technique. Cross sections were prepared after 8 weeks of storage to ensure complete setting. Bond strength was performed with a push-out test using a universal testing machine using a cross head speed of 1 mm per minute. Additionally, the failure modes were investigated using a digital microscope.

The results of bond strength analysis showed that AH Plus had the highest push-out bond strength. Results were expressed in Newton per square millimeters. However, this values are similar to Megapascals [MPa] which is more common to express and to compare bond strength values. Bond strength revealed different results between the various canal areas. While Ende CPM Sealer revealed the lowest bond strength values in the present study, AH Plus showed the highest bond strength results.

The present paper is well-organized and nicely written so that there are no changes necessary. However, regarding the fact, that several factors of influence, the authors should include the potential effect of their irrigation protocol with regard to the investigated bond strength. Irrigation was performed with NaOCl, followed by EDTA. Regarding the amount of the liquids, the information was given. Due to the fact, that irrigations have effects on root canal dentine with respect to reduction of micro hardness, tensile strength, and surface roughness/erosion, the
effective contact time would be relevant. Further, the authors used EDTA as final irrigation. Regarding the fact, that the removal of smear layer is a relevant factor for sealer bond strength, this irrigation was recommended in numerous studies. But the use of EDTA as final irrigation was shown to have also softening effects on root dentin which may affect bond strength. But other irrigants may also do so. However, please include this aspect within the Discussion Section.

Please correct page 9, line 6: "toot" into "tooth"

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