Author’s response to reviews

Title: Comparison of the abrasive properties of two different systems for interproximal enamel reduction: oscillating versus manual strips

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Replies to Reviewers’ comments (ALL CHANGES IN THE TEXT AND TABLES WERE HIGHLIGHTED IN RED FONT).

Reviewer 3:

Christian Kirschneck, DDS, Ph.D., Ph.D.

1.) Table 1 shows only one statistical test and probably timepoint (this is not clear), whereas figures show results after each respective cycle. Furthermore, means and SD from Table 1 do not match any of the results shown in Figure 1. This discrepancy should be clarified and possibly (descriptive) results from each cycle added to Table 1 with according statistical tests.

We would like to thank you the reviewer for his/her comment. In Material section we better explained the steps followed during the tests. Now it is clear the reason why means and standard deviation from Table 1 do not match with the results shown in Figure 1. Indeed, Table 1 compares the mean values obtained from 24 cycle tests performed on both oscillating and manual strips. We decided to insert Figure 1 regarding the comparison of only one cycle test performed on both system with the objective of visualizing the different strip wear performance to be easily understood by the readers. Now the legends to Table 1 and Figure 2 have a more extensive explanation. Moreover, since enamel reduction presented with the same trend in all cycle tests Figures 2 and 3 are representative of all single tests.
2.) There are still some minor errors in the English language such as "indipendent" instead of "independent".

Thanks to the authors for his/her comments. The article has been edited and corrected.

3.) A scheme detailing the timeline of events T0 to T3 in illustration should be added to clarify experimental design.

I would like to thank you the reviewer for his/her comment. The following paragraph untitled “Description of cycle test setting” was added in the Methods section to clarify the experimental design: “Each strip, both oscillating and manual, underwent one test consisting of 8 cycles. Therefore, a total of 24 cycles were performed for oscillating strips (3 strips) and a total of 24 cycles for manual strips (3 strips). One cycle (30 seconds) was set according to the following steps:

1. For both systems, contra-angle reciprocating movement started before the data acquisition in order to eliminate any load dissipations (T0, no contact between the strip and tooth surface);

2. With the contra-angle activated, the movable rig of the Instron machine moved down at 0.1 mm/s till the load of 0.1 N (T1, first contact between the strip and the tooth surface);

3. The movable rig moved down of a further 0.8 mm to deflect the strip of 0.8 mm, corresponding to a load of 1 N applied on tooth surface. The strip worked for 30 seconds (T2, working contact between the strip and tooth surface);

4. At the end of 30 seconds, the handpiece returned to the starting point (T0);

5. The contra-angle reciprocating movement was stopped and the movable rig of the Instron machine moved down again till the load of 0.1N (T3, contact between the strip and the tooth surface after stripping).

Each cycle was performed on two untreated tooth surfaces rotating of 90° around the cylinder pot in the metallic clamp support. The down displacement of the movable rig from T0 to T1 position was recorded at the end of each cycle and calculated by Bluehill software. The displacement difference recorded at T3 and T1 was reasonably the dimension of the reduced enamel.”

Also, in the Abstract the following sentence has been added in the Method section: “Each strip underwent one test of 8 cycles (30 seconds each).”
4.) Sample size(s) should be added to Table 1.

Table 1 was changed according to reviewer’s comment.

5.) Figures 1 and 2: statistically significant differences should be noted as asterisms indicating the degree of significance (* p<0.05, **p<0.01, ***p<0.001). Furthermore, standard deviations should be added to all bars and a statement added to the legend that means and standard deviations are shown in the figures. Also, the sample size the means (each bar) are based on should be specifically stated in the Figure legend. As stated above the information given in Table 1 differs from the bars shown in the Figures, which should be clarified. Even if the charts are just for visualisation for the readers, the beforementioned information in the graph would allow a much easier understanding of the results.

According to reviewer comment Figure 3 has been removed. Figure 2 has been modified as explained before.