Author's response to reviews

Title: Comparison between two methods of working length determination and its effect on radiographic extent of root canal filling: a clinical study

Authors:

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Author's response to reviews:

The Biomed Central Editorial team:

Object: MS : 1997176601627998- Comparison between two methods of working length determination and its effect on radiographic extent of root canal filling: a clinical study.
Thank you for reviewing my manuscript. The comments made by the reviewers were of great help. Please note that the title of my manuscript has been changed to (Comparison between two methods of working length determination and its effect on radiographic extent of root canal filling: a clinical study) in response to the reviewers comments.

In response to the reviewers comments the following changes have been made:

Reviewer # 1 (Dr J de la Macorra)
* Major Compulsory Revisions

1. INTRODUCTION
Paragraph "Radiograph is a two dimensional picture of a three dimensional object, this is added to technique sensitivity [12], superimposition of anatomical structure [13], patient discomfort and most important is the increased risk of ionizing radiation." is difficult to understand.
* Introduction has been rewritten to clearly define the problem and revision of literature review has been made.

2. MATERIAL AND METHODS
In group II same procedures as in group I "were performed except that electronic measurements were supported by paralleling[...working length radiograph". How was this done, i.e.: what does exactly mean that electronic measurements were "supported"?. When there was a discrepancy, which of the measures (radiograph or EAL) was assumed to be correct?. What and how was the decision made?
* In group II a clearer description on how electronic measurements were verified by radiographs, how decision was made if discrepancies were found and what criteria was used on when to repeat a radiograph.

( In group (II) with a size 10 or 15 K-files set on a pre-estimated electronic length inside root canals a working length radiograph (AGFA, Dentus M2, Heraeus, Kulzer, Germany) placed in a film holder (Hawe Endo-bite (anterior/posterior), Kerr Hawe SA, Switzerland) was taken (Trophy Vincennes France, HT KV 65 mA 8). The radiographic length was then recorded. If any discrepancy between the electronic length and the radiographic length was found then a decision was made on the appropriate adjustment based on both the radiographic picture aided by the electronic measurements. Radiographs were repeated if root apices were not clear.)

3. RESULTS
A. Standard deviations are not shown at any moment. No data should be presented without mentioning them. Please, include them, at least in all tables where means are cited. Standard deviations give idea of the level of precision of measurements, which is crucial in every report.
* Adding the standard deviations where means were mentioned.

B. Please, give means with no more than one decimal position. Remember: your measures were taken at the millimeter range, and more that one decimal in results is erroneous. Adding decimals does not add accuracy.
* Means recorded to only one decimal position.

C. Do not repeat data that are shown in tables. For instance, delete "with a mean distance from the tip of root filling to radiographic apex of -0.529 mm and 19 in a group II with a mean distance from the tip of root
filling to radiographic apex of -0.342 mm, 50 molar canals in group I with a mean distance from the tip of root filling to radiographic apex of -0.430 mm and 57 in a group II with a mean distance from the tip of root filling to radiographic apex of -0.346 mm. 36 upper canals in group I with a mean distance from the tip of root filling to radiographic apex of -0.465 mm and 29 in a group II with a mean distance from the tip of root filling to radiographic apex of -0.370 mm. * Because it is all better shown in table.

* Deleting the repetition of data that are shown in the tables has been done.

4. DISCUSSION

A. "In agreement with other studies [20, 28, 36, 39, 40, 45] the present study indicates that the TAZX is useful and reliable whether used alone or supported by radiograph. (Mean distance from end of root filling to radiographic apex=-0.408)." The affirmation that TAZX system is reliable does not come straight from results of report, because it is not clear what is the level a measure should have to be reliable. Please, rewrite.

* The discussion has been rewritten, the addition of standard deviation showed that the reliability level was +/- 0.5 mm from radiographic apex.

B. "When taking into account the tooth status the two groups were comparable [...]" This reviewer cannot find the results of this comparison. In Table 2 results are shown of comparing distances between Group I and II within vital and within non-vital teeth (separately), and in Table 3 the same, but comparing number of radiographs. Please, explain.

* I added table (3) to compare the mean distance from the tip of root canal filling to radiographic apex in vital versus non-vital canals.

C. "The present study agreed with previous studies of a significant reduction of the total number of radiographs [43] regardless of tooth position or status [...]". This is what is straightly deduced from results. But a careful view of methodology indicates that group II is forced to have one more radiograph than group I (to "support" measurements). Mean differences in number of radiographs between groups is of 1. How do authors interpret this? Please, comment

* I Deleted the part comparing the total number of radiographs in the two groups and kept the data of the recorded number of radiographs in each group.

What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions
Level of interest: An article of limited interest
In response to general comments made by the reviewer the following changes have been made
* Introduction has been rewritten to clearly define the problem and revision of literature review has been made.
* The discussion has been rewritten, and the conclusions have been modified
* Title and abstract has been modified

Reviewer # 2 (Dr. Ashraf Fouad)

Major Compulsory Revisions
1. The comparison of the number of radiographs in both groups is not valid. Clearly, by eliminating the working length radiograph in the first group, the second group had an average of 1 radiograph more than the first group. It would have been a valid comparison if the apex locators' measurements were used without the knowledge of the operator, who took the normal number of radiographs, and if clear criteria of when radiographs (such as master cone length) needed to be repeated. This was done in at least one previous study reviewed by the author.

* I deleted the part comparing the total number of radiographs in the two groups and kept the data of the recorded number of radiographs in each group. I added the criteria which was used on when to repeat a radiograph.

2. As is indicated in the discussion, there are other reasons for taking the working length radiograph in addition to obtaining the working length. These include an understanding of the anatomy of the canal system, curvature, position of the apical terminus, joining of canals etc. Therefore, the small risk involved in taking one additional radiograph is justified, given the added benefit with respect to the overall treatment of the patient. Furthermore, with digital radiography, which is common place in endodontics nowadays, the radiographic exposure is further reduced by a factor of half to a third of that with film.
The discussion has been rewritten elaborating more on the ALARA principle and the role of digital radiography.

3. The method with respect to the use of the Triauto ZX is not clear. On page 5, it is stated that "The lip-clip electrode was applied to the patient's lip and connected to the file". This could not be true, as the file had to be in the handpiece, which had to be running to bring the instrument to the full length of the canal. The file could not be directly connected to the negative electrode.

* Clear description of the electronic measurement of Tri Auto ZX as the lip-clip is placed in the corner of the patient's mouth and the file holder is attached onto the shaft of the hand file as recommended by the manufacturer.

4. Listing the statistical tests at the beginning of the results and elsewhere is not appropriate. The test pertaining to each analysis needs to be mentioned next to that analysis, as some tests are inappropriate for some analyses.

* I found that the T test was satisfactory to analyze my results, I moved the statistical tests from the results section to the methods section mentioning the statistical significance which was considered to be [less than or equal to] 0.05.

Minor Essential Revisions
1. (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

* Done

2. A paralleling technique for working length radiographs is not appropriate for all teeth except maxillary anteriors, which apparently were not included in this study. The reason for this is that a shift radiograph is necessary to determine the anatomical features of the canal and root as described before.

* I deleted the term paralleling but kept the description of the X-ray beaming device which was used (Film holder) since slight angulation was sometimes needed.

3. In the results section, the text seems to duplicate what is in the tables. Brief comments on the analyses presented in tables would be appropriate.

* I deleted the repetition of data that are shown in the tables.

Discretionary Revisions
1. There are some sections in the discussion where previous work is mentioned without relating it to the findings of this study (e.g. Page 11 first and second paragraphs). These need to be more directly related to the findings of this study or eliminated.

* The literature review has been revised relating the previous studies to the present one in a better way.

2. Hypochlorite is one word. Also, a bead sterilizer is no longer "commonly available in endodontic clinics", as it is not an adequate sterilizer, and has no other useful function.

* Done.

What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

Level of interest: An article of limited interest

Quality of written English: Needs some language corrections before being published

* Done

Statistical review: No

Declaration of competing interests: I declare that I have no competing interests

* Done.