Reviewer’s report

Title: Imaging study of coronal structural matching of the distal radius in normal adults

Version: 0 Date: 12 Dec 2019

Reviewer: Sarv Priya

Reviewer's report:

General comments: The study described is promising in terms of usage of 3D reconstruction for distal radius fracture analysis. However, the conclusion is far etched and is not supported by the data presented. The authors concluded that coronal self matching of distal radius by 3D CT is more accurate than x-ray; however, no where in the manuscript these two have been compared. It is not clear how the authors reach to this conclusion. All that could be said based from authors' findings is about normal range of radio-lunate distance and normal radio-ulnar joint distance on CT data. The other major issue is no mention of how the data was obtained. The "Method" section states that 80 CT images of neutral wrist joint of normal patients were "randomly selected". I am not clear why the CT was performed in the first place for normal patients with no clinical need. That should be explained. Secondly, if the data was collected as part of a prospective study and CT was acquired on normal patients, there should be a mention of IRB and patient consent to justify ethical practices in data collection. The other major issue is a claim made by authors- Page 5 Background section- Line 15 "We systematically reviewed the literature and concluded that coronal structural position matching of the distal radius may be an important factor affecting wrist function, which has not been paid much attention[2,3]". These references belong to different studies and have not been performed by authors. So again it's not clear on what basis the authors "concluded" the said statement that was mentioned by the cited references.

Specific comments:-
Background- 1. Please rephrase line 15 about systematic review and conclusion. If authors actually did a systematic review on this topic, please cite a reference. Otherwise delete or rephrase the line. 2. Description about proposed study is clear. Methods-1. Please describe in details how the patients were selected. Was consent obtained? This is not clear. 2. What was the reconstruction parameter of CT- specifically slice thickness. 3. Please provide reference for line 21 about "self-matching of the distal radius.....". 4. There is a lot of confusion between 9 groups of data and 9 sets of data (line 28 and 32). Are these same or different. Please make it simple and uniform. 5. Please mention figure numbers from 10-13. Also please provide more clear figures on calculation on radio-lunate distance. The measurement are not clearly discernible from provided images.

Results: 1. Again please be uniform about 9 groups or sets (Line 17 and 27). 2. There is no description about 10 sets (Line 29) or 10 groups (line 34) of data of radio-lunate distance in methods section. What are these? Please clarify. 3. Please mention Table number in the result section. None of these have been mentioned in the results section. 4. The last section from line 1 (page 9)- Various p-values about spacing are mentioned. It is very confusing about what authors wants to state. First of all, what is difference between "palmar line spacing and palmar lateral spacing". Similarly, "dorsal line spacing and dorsal lateral spacing". Palmar lateral or distal lateral spacing have not been described in methods section. Are these same or different. This whole section needs more clearance.

Discussion-1. Line 31- When the author says "In the normal population, there was a correlation between the palmar line and the dorsal line spacing on each
horizontal plane and the spacing of the median line on each horizontal plane, but there were no
correlations between the palmar and dorsal lines"- Is it from literature- if yes, please cite. If it is
based on authors present data; observation is not very clear. Please elaborate.Conclusion:1.
Conclusion mentioned in abstract and main text are different. Figure2:Please provide more detail
about where the measurements were actually made. A case example would be great.

**Are the methods appropriate and well described?**
If not, please specify what is required in your comments to the authors.

No

**Does the work include the necessary controls?**
If not, please specify which controls are required in your comments to the authors.

Unable to assess

**Are the conclusions drawn adequately supported by the data shown?**
If not, please explain in your comments to the authors.

No

**Are you able to assess any statistics in the manuscript or would you recommend an
additional statistical review?**
If an additional statistical review is recommended, please specify what aspects require further
assessment in your comments to the editors.

I am able to assess the statistics

**Quality of written English**
Please indicate the quality of language in the manuscript:

Acceptable

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If you can answer no to all of the above, write 'I declare that I have no competing interests' below. If your reply is yes to any, please give details below.

None

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