Reviewer’s report

Title: Improving the prediction of the trabecular bone microarchitectural parameters using dental cone-beam computed tomography

Version: 2 Date: 03 Dec 2018

Reviewer: Ruben Pauwels

Reviewer's report:

I thank the authors for meticulously revising the manuscript in accordance with each comment. Several methodological aspects are more clear in this revision. I have a few more small comments to follow up on comments made previously:

1. The reply stating "The scan conditions for the use of dental CBCT in the present study were based on that commonly used in clinical dentistry. In addition, we have revised the manuscript" misses the point of my initial comment. While the scan _settings_ were clinically representative, the scanned _object_ was not because it is much smaller than a full human head. As a result, you are overestimating the actual quality (sharpness, noise, artefacts) found in a real clinical scan. This is a common limitation and should not be a reason why this manuscript cannot be published, but please take it into account for future research.

2. The reply stating "This study adopted BV/TV (%), TbTh (mm), TbN (1/mm), and TbSp (mm) for assessment indicators, following Bouxsein et al. [1], because they are the most representative parameters for trabecular bone microarchitecture" is not entirely satisfactory, because this reference deals with _rodent_ bone. For human bone characterization, it is quite possible that other parameters can be useful as well. In future research, I suggest to not only focus on BV TbTh and TbSp but to augment your data using other bone structure parameters.

3. First paragraph in discussion: "However, the use of dental CBCT for measuring trabecular bone microarchitectural parameters was limited by the partial volume effect caused by the resolution of dental CBCT". This is one reason, yes, but even a CBCT reconstructed at 1 micron voxel size would not have the same resolution as microCT, because there are physical factors limiting its spatial resolution rather than reconstruction parameters. I suggest to revise this sentence to mention the larger focal spot size in CBCT (usually 0.5 mm), the limited number of projections (up to 1000 but usually a few hundred), and finally also the partial volume effect (although the voxel size is dictated by the detector pixel size, it is OK to mention that PVE is due to the large voxel size)

4. I believe the following study can be added to Table 3 because it also included correlation analysis between CBCT and microCT:
Comparison of mandibular bone microarchitecture between micro-CT and CBCT images.

Panmekiate S, Ngonphloy N, Charoenkarn T, Faruangsaeng T, Pauwels R.

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

Yes

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

Yes

**Are the conclusions drawn adequately supported by the data shown?**
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Yes

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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

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