Reviewer’s report

Title: Novel foetal echocardiographic image processing software (5D Heart) improves the display of key diagnostic elements in foetal echocardiography

Version: 0 Date: 03 Oct 2019

Reviewer: Jing Deng

Reviewer's report:

This is a very interesting paper examining the clinical usefulness of a commercially available post processing application - 5D Heart - for reformatting standard views / key structures of the fetal heart.

The raw data and analyses are sufficient for potential publication in a medical imaging journal. However, major revision is needed to address the following issues:

1, Clarity of the presentation. For instance, a few phrases have been introduced and discussed but their definitions are only mentioned a few paragraphs later. This should not be a problem for reviewers specialised in this area, but the journal's readership may find it difficult to comprehend. Another example is the use of the two terms: "eight cardiac diagnostic planes" and "nine standard diagnostic views".

2, Duplication and organisation. For example, imaging quality scoring occur twice: one in the Methods and another one in the results. It should appear only in the former section. Table and Figure captions are also unnecessarily duplicated in the Results.

3, Conciseness. For example, "In summary" in the last paragraph of Discussion and Conclusion should be combined into one.

I believe the above three issues are partly to do with authors' English proficiency and can therefore be addressed with the help from editors and/or other professionals.

4, Discussion may be improved by not only emphasising 5D Heart's advantages [such as reduced time and expertise for reformatting clinically useful views], but also disadvantages. These can include: [a] relatively poorer 3D imaging spatial and temporal resolution in comparison to 2D imaging; [b] lack of interaction to avoid acoustic shadowing during a fixed volume acquisition in comparison to a real-time 2D scan; [c] imaging degradation by motion artefacts even with the use of STIC.

5. If accepted for publication, figure/image resolution needs improving.

Other minor suggestions and queries are embedded in the attached PDF.
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.

Unable to assess

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

Yes

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 recommend additional statistical review

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

Not suitable for publication unless extensively edited

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