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Retinal relaxation following membrane peeling: Effect on vision, central macular thickness, and vector analysis of motion

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Ref.: Ms. No. JCTRes-D-20-00003
Retinal relaxation following membrane peeling: Effect on vision, central macular thickness, and vector analysis of motion
Journal of Clinical and Translational Research

Dear author(s),

Reviewers have submitted their critical appraisal of your paper. The reviewers' comments are appended below. Based on their comments and evaluation by the editorial board, your work was FOUND SUITABLE FOR PUBLICATION AFTER MINOR REVISION.

If you decide to revise the work, please itemize the reviewers' comments and provide a point-by-point response to every comment. An exemplary rebuttal letter can be found on at http://www.jctres.com/en/author-guidelines/ under "Manuscript preparation." Also, please use the track changes function in the original document so that the reviewers can easily verify your responses.

Your revision is due by May 05, 2020.

To submit a revision, go to https://www.editorialmanager.com/jctres/ and log in as an Author.

You will see a menu item call Submission Needing Revision. You will find your submission record there.

Yours sincerely,

Michal Heger
Editor-in-Chief
Journal of Clinical and Translational Research

Reviewers' comments:

Reviewer #1: The manuscript is well written, and addresses an important clinical question asking if the amount of retinal contraction / vessel displacement is predictive for the visual outcome in patients with epiretinal membranes (ERM). Strengths of the study are the well described methodology and the image analyses using vector representation. Limitations of the study are the low number of cases, and its retrospective nature. While the mentioned limitations limit generalisability, the application of vector matrices to quantify the vascular shift is innovative. The study could be of interest to the broad readership of the journal as it could stimulate the quest to analyse quantitatively the amount of retinal contraction and vessel displacement in a larger population of ERM patients using vector matrices. The following suggestions are made:

- Methods: How far back did the data search go? What is the time period of the analysed cases?
- Mehods: Was the ILM (actively) peeled?
- Methods: Was the amount of metamorphopsia assessed pre- and postoperatively?
- Figure 1: label/connect the single data points to allow analysis of the visual acuity course of each study subject indiviudally (similar to Figure 2); consider omitting the whisker plot since with such low numbers does not make great sense.
- Results, line 49: Was there any cystoid macular edema noted at baseline? Statement "This edema took several weeks to resolve" is too weak: How many eyes did still show CME at last visit?
- Results, line 49 - 55: the whole paragraph is a bit too narratively: Could you please give the exact numbers

- Figure 3: Why was the vector analyses only applied for 3 eyes?
- Legend Figure 3: Change "select" to "selected"
- Figure 4: Different OCT scan positions to illustrate the pre- and postoperative morphology are chosen: Why? Suggest using the same retinal line scan where possible
- Discussion: The first paragraph until line 14 of page 10 seems to be more suitable for the introduction or thoughts to include in the discussion paragraph after having summarized the pertinent findings/message of the paper.

Reviewer #2: Dear Author,

the manuscript under review is a very interesting study, showing an innovative method to analyze how retina and vascular networks react when tangential /tractional forces, represented

by Epiretinal membranes, act on it and when they are removed following surgery. Despite the small number of cases analyzed,and further larger studied needed, it could represent an innovative method to analyze how retina behave after peeling in order to give more appropriate answers to questions such as peeling extension, ILM peeling or not, timing. Moreover if this methodology could be revealed valid, it could represent an innovative way for a proper follow up for the patients.

Reviewer #3: Were the patients consecutive patients? Who read the images? Is the reading reproducible and repeatable?

Author's rebuttal

9 April 2020

Prof Michal Heger Editor-in-Chief Journal of Clinical and Translational Research
Re: Re-submission of JCTRes-D-20-00003

Dear Prof Heger:

Thank for for the opportunity of resubmitting our work on the use of vectors to analyze on the retinal surface following an epiretinal membrane peel. You will find below an answer to the queries from reviewers.

We hope that in its present form the article will be acceptable for publication.

Best personal regards
Marc D. de Smet

Modifications to the manuscript based on review comments:

Reviewer #1: The manuscript is well written, and addresses an important clinical question asking if the amount of retinal contraction / vessel displacement is predictive for the visual outcome in patients with epiretinal membranes (ERM). Strengths of the study are the well described methodology and the image analyses using vector representation. Limitations of the study are the low number of cases, and its retrospective nature. While the mentioned limitations limit generalisability, the application of vector matrices to quantify the vascular shift is innovative. The study could be of interest to the broad readership of the journal as it could stimulate the quest to analyse quantitatively the amount of retinal contraction and vessel displacement in a larger population of ERM patients using vector matrices. The following suggestions are made:

1- Methods: How far back did the data search go? What is the time period of the analyzed cases?

This paper was initially written (then re-written from 2012 onwards). It was submitted and rejected from numerous ophthalmic journals in part because the power of vector analysis was

not understood. The database was searched for cases over the previous year that met the selection criteria.

The text was modified as follows: *"An electronic practice based database was retrospectively searched for the prior year patients, diagnosed with an epiretinal membrane, having undergone an epiretinal membrane peel with 6 or more months of follow-up and in whom spectral domain SLO-OCT images were available for analysis. "*

2- Mehods: Was the ILM (actively) peeled?

Yes, it was actively peeled.

The section was modified as follows: *"If staining indicated the presence of the ILM, the ILM was removed from the foveal surface over a minimum area of three disc diameters."*

3- Methods: Was the amount of metamorphopsia assessed pre- and postoperatively?

No this was not done at the time as we did not have an objective method for measuring metamorphopsia. If we repeated the study, the use of the Japanese M-chart would be useful in this regard. No modification was made to the text.

4- Figure 1: label/connect the single data points to allow analysis of the visual acuity course of each study subject individually (similar to Figure 2); consider omitting the whisker plot since with such low numbers does not make great sense.

Figure 1 has been modified to show a link between points. This was initially avoided to take care of overlapping points. A box plot overlying the dates indicates the average vision achieved at each time point

5- Results, line 49: Was there any cystoid macular edema noted at baseline? Statement "This edema took several weeks to resolve" is too weak: How many eyes did still show CME at last visit?

There was no edema prior to surgery. The text is changed as follows:

"While none of the eyes had macular edema prior to surgery, four eyes developed macular edema by one month after surgery associated with an increase in central macular thickness. This edema when present took up to 8 weeks to resolve. "

6- Results, line 49 - 55: the whole paragraph is a bit too narratively: Could you please give the exact numbers

Changes in the previous text make the narrative clearer. No further change brought to the text.

7- Figure 3: Why was the vector analyses only applied for 3 eyes?

This had to do with the time required to carry out the analysis which was not automated. This being a pilot project, it was felt sufficient to demonstrate the approach. The next stage is

automation and an application to a broader number of patients looking at both superficial and deep plexus using OCTa.

8- Legend Figure 3: Change "select" to “selected"

Done

9- Figure 4: Different OCT scan positions to illustrate the pre- and postoperative morphology are chosen: Why? Suggest using the same retinal line scan where possible

Modifications made. Scans were taken in the same direction. The choice was made initially to provide the best image of the posterior pole as they are of the same area but agreed that an image of the same scan is important. The B scans are of the same area at the appropriate time point.

- Discussion: The first paragraph until line 14 of page 10 seems to be more suitable for the introduction or thoughts to include in the discussion paragraph after having summarized the pertinent findings/message of the paper.

I did not change the discussion. While I agree that the text could fit better in the introduction, I specifically placed it here for context and to facilitate the further elaboration of a discussion of the results. Since none have ever done vector analysis in this context, it was in my opinion important to frame it based on prior work.

Reviewer #2: Dear Author, the manuscript under review is a very interesting study, showing an innovative method to analyze how retina and vascular networks react when tangential /tractional forces, represented by Epiretinal membranes, act on it and when they are removed following surgery. Despite the small number of cases analyzed,and further larger studied needed, it could represent an innovative method to analyze how retina behave after peeling in order to give more appropriate answers to questions such as peeling extension, ILM peeling or not, timing. Moreover if this methodology could be revealed valid, it could represent an innovative way for a proper follow up for the patients.

We thank the reviewer for his kind words and the fact that no modification is required.

Reviewer #3: Were the patients consecutive patients? Who read the images? Is the reading reproducible and repeatable?

These were not consecutive patients. The images were analyzed by the first and second authors. Provided the image quality is sufficient, the quantitation is repeated and reproducible.

No change was made to the text.

2nd editorial decision

Ref.: Ms. No. JCTRes-D-20-00003R1

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Journal of Clinical and Translational Research

Dear authors,

I am pleased to inform you that your manuscript has been accepted for publication in the Journal of Clinical and Translational Research.

You will receive the proofs of your article shortly, which we kindly ask you to thoroughly review for any errors.

Thank you for submitting your work to JCTR.

Kindest regards,

Michal Heger
Editor-in-Chief
Journal of Clinical and Translational Research

Comments from the editors and reviewers: