Reviewer’s report

Title: Effect of Corneal Cross-linking on Endothelial Cell Density and Morphology in the Peripheral Cornea.

Version: 0 Date: 17 Feb 2020

Reviewer: Nir Sorkin

Reviewer's report:

The authors present a study looking at the effect of CXL on peripheral endothelial cell density. They found no significant ECD differences between preop and 3m postop measurements with an average EC loss of 1.1% to 2.4% over 3 months. While the concept of the study is interesting and very relevant, the sample size seems too small to draw any conclusions on similarity. How did the authors choose a sample size of 20 patients? I assume there is a larger number of CXL cases whose data can be accessed retrospectively? A post-hoc power calculation shows that the power of the study to detect an ECD decrease of 200 cells/mm2 is around 44% and the beta is 0.560. This is a low power value and a high value for beta. I don't think we can say for certain there is similarity based on that. An EC loss of 2.4% over 3 months is not physiologic since it can imply a 10% annual EC loss. Therefore, the study should be powered so that this question can be answered. I would recommend that the authors increase their cohort size. A sample size of 45 should give the study a power of 80% to detect a change of 200 cells/mm2. Since this is a retrospective study, I assume that ECD is performed routinely and therefore should be possible to increase cohort size, I would recommend to include a sample size analysis in the manuscript as well.

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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