Reviewer Recommendation and Comments for Manuscript Number AB-16-2316

Study on the deformations of the lamina cribrosaduring glaucoma

Original Submission
Cormac Flynn, PhD (Reviewer 2)

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Recommendation: Minor Revision   **Overall Manuscript Rating (1-100):** 85

Manuscript Question(s):	Scale	Rating
Please rate on a scale of 1-3 whether the Graphical Abstract is a meaningful and an accurate representation of the article. 1 = Meaningful; 2 = Not Meaningful; 3 = Not Provided. For more information, see www.elsevier.com/graphicalabstracts.	[1-3]	N/A

Reviewer Blind Comments to Author:

Summary:
The authors propose a mathematical model of the lamina cribosa (LC) using Reissner's thin plate theory. The model represents an advancement over previous models because the shear deformation is represented. The radial, tangential, and shear strain of the LC was calculated at different radii and through the thickness of the layer. The deformation of nerve channels was inferred from the strain results. The results support certain clinical observations, including the observation that pores nearer to the rim are more likely to be damaged than pores nearer to the centre of the LC.
The paper is well written. The model and results are clearly presented with links made to clinical observations.

I have a number of comments listed below.

Specific comments:

1. It is recommended to get a native English speaker to proof-read the manuscript. It is very readable but there are several spelling and grammatical errors.
2. Abstract: "The results here confirm some clinical speculations during glaucoma." It would be informative to list some of these speculations that the model confirms.
3. Abstract: The use of "etc." should be avoided.
4. Abstract: Some quantitative results would draw further reader interest.
5. Perhaps the keywords should include Reissner's thin plate theory.
6. Last line, page 5: Avoid the use of the term "etc.".
7. Last line, page 9: "The present model is obviously in better agreement with the experimental results than the previous models." Can the authors provide a quantitative measurement of the accuracy?
8. Second last line, page 12: The authors refer to the anterior surface. It would be helpful to label this surface in Fig. 4. Should "interior surface" in Fig 4b be "anterior surface"?
9. Second line, page 13: Fig. 3b should be Fig. 4b.
10. First paragraph, page 16: This section of the discussion introduces new results. It would be better to introduce the results in the results discussion and discuss the results here.
11. Second paragraph, page 16: "The results here partly explain the racial differences in susceptibility to the damages of the LC during glaucoma" It would be informative to outline briefly what the ethnic differences are that are supported by the model.
12. The authors do not detail what the limitations of the model are. This should be addressed in the discussion.

Reviewer Confidential Comments to Editor:
INSTRUCTIONS FOR REVIEWER BLIND COMMENTS TO THE AUTHOR:

* Please do not comment specifically on the acceptability of the manuscript or provide any information that may serve to identify you.

* Please number your comments.

COMMENTS TO THE EDITOR:

1) General Assessment:

Please rate as: Excellent/Good/Fair/Poor