Peer Review File

Reviewer A:

Comment 1: First, in the tile please indicate the clinical research design of this study, i.e., a diagnostic test.

Reply 1: Thank you for the advice. We have made correction in the corresponding area in the abstract and method (Changes in the text: **Line 9, Para 2, Page 2; Line 6, Para 1, Page 4)**.

Comment 2: Second, the abstract is not adequate. In the background, please explain the clinical needs for this research topic and what the knowledge gap is. In the methods, please briefly describe the inclusion of subjects and how the golden diagnosis of macular diseases was made. In the results part, please also report the 95%CIs of the sensitivity and specificity and please report the sample size that used for analyzing the diagnostic test. Given the poor sensitivity and specificity, which should be at least 0.8, the conclusion should be made with cautions.

Reply 2: Thank you for raising this concern. Clinical needs and knowledge gap was supplemented in the background of the abstract as follow. Preoperative evaluation of macular disorders is crucial to predict postoperative visual outcomes among patients with cataract. The swept-source optical coherence tomography (SS-OCT) based optical biometer was proved to be useful in screening macular pathology. However, the impact of lens opacities and axial lengths on macular disease screening using SS-OCT based optical biometer remained unknown (Changes in the text: **Line 2-6, Para 1, Page 2**).

In the methods part, the inclusion of subjects and golden diagnosis method was added (Changes in the text: **Line 9-12, Para 2, Page 2**).

In the results part of both abstract and manuscript, 95% CIs of the sensitivity and specificity were supplemented (Changes in the text: **Line 20-21, Para 3, Page 2; Line 1-2, Para 1, Page 6; Line 10, Para 1, Page 6**). The sample size used for the diagnostic test were also added in result and the Table 2 (Changes in the text: **Line 21, Para 3, Page 2; Table 2**).

Last, thank you for raising this critical point that given the poor sensitivity and specificity, which should be at least 0.8, the conclusion should be made with cautions. In fact, the specificity rate was 0.87 (95% confidence interval, 0.78-0.92). We do agree with Reviewer A that the sensitivity was

lower than 0.8 even after excluding cases with indistinguishable foveal images. The sensitivity and specificity rates of SS-OCT were reported to range from 63%~83% and 72%~89%, respectively (1-3). Despite the influence of examiner on the sensitivity and specificity rates, the SS-OCT was reported to have a higher sensitivity (63% vs 36%) rates than fundus biomicroscopy (2), indicating that SS-OCT better than fundus biomicroscopy in detecting macular disease. Moreover, the SS-OCT can only use as a screening tool due to the low resolution of each retinal layer. Therefore, we revised the conclusion part of the abstract as follow: routine SS-OCT based biometric measurement for the evaluation of macular pathology simultaneously prior to cataract surgery is suggested except for patients with advanced cataract and long axial length (Changes in the text: **Line 22-23, Para 4, Page 2**).

Comment 3: Third, in the introduction part, the authors should have comments on the strengths of SS-OCT and the limitations of previous studies to indicate the clinical needs of this research topic.

Reply 3: Thank you for the advice. As we can find in the end of Para 2 of the introduction that we have already comment on the SS-OCT that the detection rate of macular disorders can be improved after using SS-OCT. And there were no studies evaluated the impact of lens opacities and axial lengths on macular disease screening using SS-OCT. But we do agree with Reviewer A that more comments should be made. More comments on the strengths of SS-OCT and the limitations of previous studies were supplemented at the end of Para 2 of the introduction part (Changes in the text: **Line 22-25, Para 2, Page 3**).

Comment 4: Fourth, in the methodology, please describe the clinical research design and report the authors' considerations for the sample size, in particular those for the analysis of the diagnostic ability of SS-OCT. The inclusion of subjects should be clearly described. In statistics, the authors should describe the threshold values for AUC, sensitivity and specificity for a satisfactory diagnostic test. Please indicate the P value of statistical significance.

Reply 4: Thank you for raising this concern. Firstly, this was a diagnostic accuracy study (Changes in the text: **Line 6, Para 1, Page 4**). The sample size was set according to the following references (4-6), which were added at the end for your kind review. A total sample size of 134 including 27 subjects with disease was needed. In our study, we included 224 eyes including 82 eyes with

macular disease. After excluding these cases with subcapsular opacities score ⩾3.5 and axial length ⩾28.9 mm, there were 136 eyes including 53 eyes with macular disease. Therefore, our sample size was big enough to analysis the diagnostic ability of SS-OCT. We added supplementary description in the corresponding area of the method (Changes in the text: **Line 8-9, Para 1, Page 4**).

As we mention in Para 1 (**Line 6-12, Para 1, Page 4**) of the method part that we retrospectively included patients who underwent preoperative cataract examinations at our hospital between November 2020 and June 2021. The inclusion criteria were as follow: patient underwent both IOL Master 700 and SD-OCT. Patients with low-quality SD-OCT images were excluded.

In the statistical analysis, the fitted area under the ROC curve (AUC) indicates the diagnostic value of the test. When $0.5 < AUC ⩽ 0.7$ indicates low diagnostic value of the test, while $0.7 < AUC ⩽ 0.9$ indicates medium diagnostic value of the test. And $AUC > 0.9$ indicates high diagnostic value of the test. Values of $P < 0.05$ were considered statistically significant. We added supplementary description in the corresponding area of the method (Changes in the text: **Line 17-20, Para 2, Page 5**).

As for values of sensitivity and specificity, there seems no specific threshold. We compared the sensitivity and specificity rates in our study with other researches in the Para 2 of the discussion part. The sensitivity and specificity rates of SS-OCT were reported to range from 63%~83% and 72%~89%, respectively (1-3). Similarly, SS-OCT had a sensitivity of 68% and a specificity of 87% to detect macular pathology in our study. Moreover, as we mention in Rely 2, the SS-OCT was reported to have a higher sensitivity (63% vs 36%) rates than fundus biomicroscopy (2), indicating that SS-OCT better than fundus biomicroscopy in detecting macular disease.

Reviewer B:

Comments to the Author

The study aims to evaluate the influence of lens opacities and axial lengths on foveal image quality detected by swept-source optical coherence tomography (SS-OCT) -based optical biometer, as well as sensitivity and specificity for the detection of macular diseases. They found that SS-OCT based optical biometer is an effective screening approach to detect macular pathology before cataract surgery. Routine SS-OCT based biometric measurement for the evaluation of macular pathology simultaneously prior to cataract surgery is necessary

except for patients with advanced cataract (posterior subcapsular opacities score.

Reply: We really appreciate that the kind reviewer has had an excellent summary of our current article. Thank you for Reviewer B's positive and encouraging comments on our work. We were encouraged to have more in-depth research regarding the SS-OCT based biometric optical biometer in future.

Reviewer C:

Comments to the Author

This is a thorough study in comparing two imaging methods used to identify retinal health prior to cataract surgery. Apart from some very minor typographical errors, the paper is a clear representation of what has been carried out in the study. The translational application of the study is good.

Reply: Thank you for Reviewer C's encouraging comments on our work. Sorry for the typographical errors, we have doubt checked and corrected according to reviewers and editors' comments. We will keep our kind notices in mind when performing our future research work.