Author's response to reviews

Title: Spectral domain optical coherence tomography in patients after successful management of postoperative endophthalmitis following cataract surgery by pars plana vitrectomy

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Author's response to reviews:

Dear Editor,

We would like to thank you for your quick response and valuable criticism on our manuscript MS: 1877741433123193.

Below we provide the answers to the questions raised by you and the reviewers pointing out the changes that we made accordingly. For an easier reading the changes performed in the manuscript are also attached to the “cover letter” file highlighted with yellow colour.

We clarified the time frames in the study, better specified the indication of vitrectomy and rewrote the discussion as highlighted by the reviewers.

We have changed Figure 1 to a more accurate scan through the fovea.

Regarding the methodology it is important to note that we did not perform any special examinations on the outer retinal microstructure.

Finally, in the discussion we did our best to explain that the observed choroidal changes are most probably due to the postcataract endophthalmitis and not the performed vitrectomy itself, for the following reasons below. First, vitrectomy was
performed in each case without any complications intraoperatively and/or in the early postoperative period. Second, we did not find any significant differences in the retinal structure even a long time after vitrectomy was performed. Third, Fujiwara et al. showed recently that there were no changes in choroidal thickness after microincision vitrectomy for ERM and macular hole. Therefore, we presume that the choroidal thickness changes were probably caused by perfusion changes due to postcataract endophthalmitis – an argumentation that we also include in the text.

We are grateful for your constructive support and hope that the significant improvements in the presentation of our results will lead to a positive evaluation of our revised manuscript.

Sincerely,

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Response to Reviewer 1
Dear Dr. Asencio,

Thank you very much for your extremely valuable comments and suggestions for the revision of our manuscript entitled „Spectral domain optical coherence tomography in patients after successful management of postoperative endophthalmitis following cataract surgery by pars plana vitrectomy”. In the following report we answer to each comment.

1. Abstract. Third Paragraph: the background is disjointed.

The abstract was extended and restructured, the sentence „Acute severe postoperative endophthalmitis may lead to severe vision loss. The aim of this study was analysis …” was inserted.

2. Sixth Paragraph: for acute endophthalmitis, early vitrectomy is fundamental for the treatment. Intravitreal antibiotics are crucial for successful treatment of postoperative endophthalmitis, and its efficacy depends both on the time it takes the antibiotic to reach an effective concentration in vitreous and the time it takes corticosteroids to block the inflammatory response. Patients who get more benefits from early vitrectomy are those with significant loss of vision at presentation, so that this technique is more suitable to other types of endophthalmitis involving more severity consequences as traumatic and endogenous types.

Furthermore, vitrectomy carries the risk of complications from surgery. It is unclear whether the authors always treated the patients with acute postoperative endophthalmitis by vitrectomy or whether they administered other treatments.

We would like to thank the reviewer for this very valuable criticism. The text was modified according to the recommendation and the role of vitrectomy in the treatment of endophthalmitis was clarified.
All patients in our study were severe cases, with serious visual loss, which required urgent pars plana vitrectomy. Due to the dense vitreal exsudation, no intravitreal antibiotic administration seemed to be sufficient and therefore pars plana vitrectomy was indicated and performed. We agree that patients with significant loss of vision at presentation get more benefits from early vitrectomy which we also included in the text.

In our study only patients with postcataract endophthalmitis were involved, other types of endophthalmitis such as atraumatic or endogenous endophthalmitis were excluded. No preoperative intravitreal antibiotics were administered, but primary vitrectomy was performed.

The authors do not define a therapeutic or diagnostic purpose. That is, they do not explain the purpose of analyzing the retinal and choroidal microstructures in this kind of patients. What is the benefit to the patients? Does it improve the visual outcome?

Thank you for highlighting the clarification of the study’s main goal at the end of the Background section. We redefined the introduction of the therapeutic or diagnostic purposes accordingly.

The objective was detailed in the final part of the introduction. Therapeutical and diagnostical purpose of the study are the following: since SD-OCT is a noninvasive examination method, we could get a better understanding of long term effect of postoperative endophthalmitis. We postulate that timing of pars plana vitrectomy or other therapeutic strategies could be improved. For the participating patients themselves the study provided no significant advantage, but for future patients we can provide prognostic information and hopefully better visual outcome.

3. Background: Objective, third paragraph: the main goal of this study…

Why have the authors chosen that period of time? Were there more cases of endophthalmitis in this period?

We agree that a clarified description of the methods section is necessary, therefore we made changes to the text accordingly.
As highlighted in the revised text we were reviewing charts from the period between 2008 -2012 which showed that 25 patients had a history of vitrectomy due to postcataract endophthalmitis. It is important to note that in this period there were more cases of endophthalmitis due to other etiologies (e.g. trauma or endogenous cases). Also, it is important to note that our department serves as a referral center for the region and therefore we included cases in which cataract surgery was performed elsewhere. We could not get contact with some of the patients, and not all patients could come for an examination due to other health or social problems, that is why not all of the identified subjects were imaged.

The authors do not explain how they estimated the sample size.

We thank the reviewer for the thoughtful comment. We did not perform any statistical analyses to estimate sample size as this was an observational analysis in design and there is very limited data available in the literature for the calculation. Instead, we were aiming to reach an acceptable number of subjects compared to other studies in the field. We made an attempt to indicate this in the text accordingly.

They neither indicate how the independence of the operator is guaranteed to evaluate each eye of the same patient nor the use of masking mechanisms.

The independence of the OCT operator was guaranteed as the masked OCT investigator did not know which eye was treated and which was not. Masked investigators have seen only the OCT images, no other patient data were available to them at the time of analyses. Choroidal thickness measurements were performed by the masked operators as well. We highlighted this important information in the text.

4. Discussion. The authors do not include the limitations of the study.

We thank the reviewer for this valuable remark. In the discussion an entire section was added detailing the limitations of our study. To our view the study had the following limitations: 1) Larger case series could enable more sophisticated statistical data, such as correlation analysis with the timing of surgery, the length of follow up time or some surgical factors, such as posterior hyaloid detachment, type of pathogens, age, etc. 2) A prospective examination of endophthalmitis patients could provide more information on any possible retinal
and choroidal changes. We decided to use the current study setup as the SD-OCT instrument used in the study is only available at our department since 2012 and the OCT images are unfortunately not interchangeable with different OCT devices. We also included these shortcomings in the discussion.

We hope our answers will provide satisfactory explanations for the issues raised during the review and would like to thank you again for the detailed criticism of our manuscript.

Sincerely

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Answers to Reviewer 2

Dear Dr. Jindal,

Thank you for your valuable comments and suggestions for the revision of our manuscript entitled „Spectral domain optical coherence tomography in patients after successful management of postoperative endophthalmitis following cataract surgery by pars plana vitrectomy”. Below we give an answer to each of the raised comment.
1. The BCVA in fellow eye was 75 letters with S.D. of 21 letters. What was the reason for such a large standard deviation in normal eye.

We explained in the manuscript the reasons for the large deviation in BCVA of fellow eyes. The patients were of older age, with a range from 56 to 89 years, one patient was amblyopic in the control eye which might have caused SD.

2. In figure 1, the legend says macular OCT but the line scan is not passing through the fovea (inner retinal layers visible). Was this scan used to measure choroidal thickness?

Figure 1 was changed according to your suggestion. We used only scans through the fovea for measurements of central choroidal and retinal thickness.

3. How was the line scan taken exactly 2000 um nasal/ temporal/ superior/ inferior to the fovea for the choroidal thickness measurements?

With the available software of the OCT the localization of the determined point of measurements could be precisely defined. With the inbuilt caliper 2000 um in each direction (nasal/ temporal/ superior/ inferior to the fovea) could be found. The choroidal thickness measurement points are shown in Figure 1.

4. In the discussion, there is a lot of emphasis on various diseases and not much on endophthalmitis.

We agree with the reviewer that we put a lot of emphasis on various diseases and not much on endophthalmitis in the discussion. The reason for this is that choroidal thickness is described in the mentioned diseases while we have only limited information about endophthalmitis and SD-OCT we could refer to.

5. It might not be right and practical to tailor the endophthalmitis treatment according to the choroidal thickness as the authors are trying to infer by their discussion on the VKH.

We would like to thank the reviewer for pointing this out. In fact, we used VKH only as an example of uveitis whereas the pathomechanism of endophthalmitis can be considered as a type of uveitis but from a completely different etiology.
6. When optical clear media was obtained within 4 weeks after vitrectomy, why did the authors wait for 48 weeks to do the OCT?

1) The aim of the study was to evaluate the long term effects of OCT. We did wait 48 months after the surgery. At the time of the surgery (2008-2012) different OCT, lacking the capability of EDI function, was only available for us. Unfortunately those data are not available, however it would be a very interesting point.

2) This OCT device was available only from 2012. The examination was cross sectional study, some patients developed endophthalmitis several years before SD-OCT examination.

We hope that our responses to the raised concerns are satisfactory and would like to thank the reviewer again for reviewing our manuscript.

Sincerely

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