Response to the letter to the editor: “Coronal plane OCT imaging and vision in macular pucker”

Ryo Matoba¹ · Yuki Kanzaki¹ · Shinichiro Doi¹ · Yuki Morizane¹

Received: 30 September 2021 / Revised: 30 September 2021 / Accepted: 4 October 2021 / Published online: 18 October 2021
© The Author(s), under exclusive licence to Springer-Verlag GmbH Germany, part of Springer Nature 2021

Dear Editor:

We thank Dr. Sebag for his interest in our article that evaluated epiretinal membrane (ERM) formation using en face optical coherence tomography (OCT) after vitrectomy for rhegmatogenous retinal detachment [1].

We agree that multifocal retinal contraction is an important factor that affects macular morphology and vision. Therefore, we classified 27 eyes with post-vitrectomy ERM formation according to the presence or absence of multifocal retinal contraction. There were 10 eyes (37.0%) that had more than one center of retinal contraction. In accordance with Gupta et al. [2], we compared the visual acuity (the logarithm of the minimum angle of resolution) between the two groups at the time of the last visit, which were categorized as a “simple pucker” if there were 1–2 retinal contraction centers ($n=21$) or a “complex pucker” if there were ≥ 3 retinal contraction centers ($n=6$). The results were 0.020 ± 0.200 for the former and 0.041 ± 0.170 for the latter, with no significant difference ($P=0.813$, Student’s t test). This indicates that the number of retinal contraction centers did not have a significant effect on the visual acuity at the last visit in the patients we studied. Possible reasons for this result include that the ERM had a small mean maximum depth of the retinal folds in both the simple and complex groups ($47.3 \pm 32.3 \mu\text{m}$ and $40.3 \pm 19.5 \mu\text{m}$, respectively; $P=0.620$, Student’s t test), the number of cases was small, and that the follow-up period was short.

We also agree that visual acuity is not the optimal way to evaluate the effects of ERM on vision. This point is mentioned in the paper as one of the limitations: “lack of functional evaluations, including those of metamorphopsia and retinal sensitivity”.

Lastly, because it was not examined in this study, the relationship between visual acuity and vitreoschisis in the formed ERM is unknown. One of the main reasons we did not examine vitreoschisis is that there is no established method for its precise detection. In recent studies, mainly B-scan OCT images were used to detect vitreoschisis; however, the current commercially available OCTs cannot detect it unless the two walls (the inner/anterior and outer/posterior layers) of the vitreoschisis are visualized simultaneously [3, 4]. That is, the presence of vitreoschisis might be underestimated in cases where the distance between the two walls exceeds the angle of view of OCT, in cases where the lambda (or Y) shape is not captured, and when the outer (posterior) layer is so thin that it is not visible on OCT. We expect that this problem will be solved in the near future by the development of OCT with a higher resolution, wider scan length, and deeper focus depth than the current OCT.

References

1. Matoba R, Kanzaki Y, Doi S, Kanzaki S, Kimura S, Hosokawa MM, Shiode Y, Takahashi K, Morizane Y (2021) Assessment of epiretinal membrane formation using en face optical coherence tomography after rhegmatogenous retinal detachment repair. *Graefes Arch Clin Exp Ophthalmol* 259(9):2503–2512. <https://doi.org/10.1007/s00417-021-05118-y>
2. Gupta P, Sadun AA, Sebag J (2008) Multifocal retinal contraction in macular pucker analyzed by combined optical coherence tomography/scanning laser ophthalmoscopy. *Retina* 28(3):447–452. <https://doi.org/10.1097/IAE.0b013e318160a754>
3. Gupta P, Yee KMP, Garcia P, Rosen RB, Parikh J, Hageman GS, Sadun AA, Sebag J (2011) Vitreoschisis in macular diseases. *Br J Ophthalmol* 95(3):376–380. <https://doi.org/10.1136/bjo.2009.175109>
4. Hwang ES, Kraker JA, Griffin KJ, Sebag J, Weinberg DV, Kim JE (2020) Accuracy of spectral-domain OCT of the macula for detection of complete posterior vitreous detachment. *Ophthalmol Retina* 4(2):148–153. <https://doi.org/10.1016/j.oret.2019.10.013>

✉ Yuki Morizane
moriza-y@okayama-u.ac.jp

¹ Department of Ophthalmology, Okayama University Graduate School of Medicine, Dentistry and Pharmaceutical Sciences, 2-5-1, Shikata-cho, Okayama 700-8558, Japan

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.