

AsOCT findings may further prove the importance of these surgical maneuvers in diminishing vitreous incarceration incidence.

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## Displacement of the Retina



Dear Editor:

We read with interest the article by Shiragami et al<sup>1</sup> on unintentional displacement of the retina after vitrectomy for rhegmatogenous retinal detachment, and the subsequent correspondence.<sup>2</sup> We too have seen evidence of retinal displacement on autofluorescence images (taken with a Topcon camera, Tokyo, Japan) in eyes following vitrectomy for rhegmatogenous retinal detachment. We have, however, made a number of additional observations of relevance in consideration of the etiology and functional implications of this postoperative finding.

Shiragami et al<sup>1</sup> described the displacement in terms of degrees of rotation, as measured by examination of patients on a synoptophore. We have observed, however, that the extent of retinal vessel displacement is not only a function of distance from the optic disc (as would be expected with a torsional displacement), but also depends on the angle or meridian in which the vessel extends from the optic disc. Most commonly vessel displacement is greater in the inferior than in the superior macula (Fig 1; available at <http://aaojournal.org>). The differing extents of displacement indicate that rather than there being a simple rotational displacement of the retina, there has in fact been variable stretching of the retina, typically most pronounced inferiorly. We hypothesize that this could relate to postoperative subretinal fluid, displaced inferiorly in upright patients, exerting tangential forces on the retina.

Shiragami et al also reported that none of their 27 patients with postoperative retinal displacement had cyclovertical diplopia or slant. However, we have found that on

careful questioning and uniocular examination patients commonly have symptoms of metamorphopsia. Whilst distortion is variable, patients with displacement most frequently describe change in image size, which is in keeping with our findings of retinal stretch.

We thus believe the postoperative finding of retinal displacement, and more precisely stretch, is of functional importance to patients. We are currently investigating whether modifications in surgical technique and postoperative posturing can reduce the impact of this for our patients.

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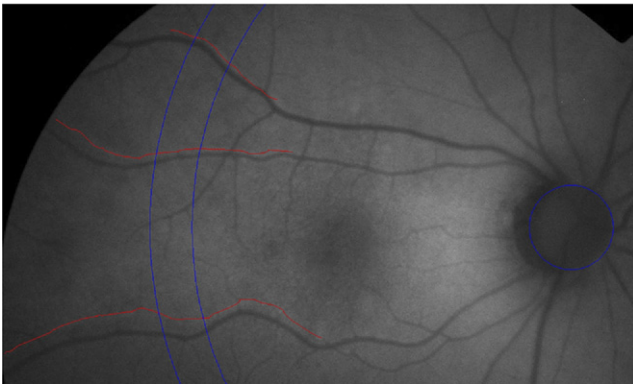
## Author reply

Dear Editor:

We are writing in reply to the question posed by Lee et al about the hyperfluorescent lines parallel to the retinal vessels that showed differing extents of displacement, resulting in variable stretching of the retina, typically most pronounced inferiorly and with rotational displacement of the retina. We were aware of stretching of the retina after vitrectomy with gas injection, as pointed out, and are grateful for the advice. Although most patients may have monocular symptoms of metamorphopsia, the exact reason is not known. It is unclear whether the retinal stretching causes metamorphopsia. However, it is clear that, if the macula is translocated or there is stretching around the disc, cyclotorsional diplopia or awareness of a tilted image could be easily compensated for by the sensory fusion ability, which is driven by the central nervous system, without clinically visible motor adaptation.

Although Lee et al hypothesize that this could relate to postoperative subretinal fluid displaced inferiorly in upright patients, exerting tangential forces on the retina, we have already commented in the Discussion section of our article<sup>1</sup> that, because a small amount of subretinal fluid usually remains at the end of pars plana vitrectomy (PPV) surgery, intraocular gas could move the retina downward due to shifting of the residual subretinal fluid during the sitting position immediately after PPV surgery. Moreover, we have also commented in the discussion of our article that, if patients adopt the strict prone position as soon as the operation is completed, retinal displacement may be prevented, especially large retinal detachment including macular detachment.

Furthermore, in 4 eyes of 4 patients who were followed for over 12 months, the hyperfluorescent lines moved slightly closer to the original retinal vessels. The retina



**Figure 1.** Fundus autofluorescence image following a retinal detachment treated with vitrectomy and intraocular gas. In the uppermost image, displacement of the vessels is seen. The old site of vessels is highlighted in red on the lowermost enlargement. Blue circles are shown centred on the optic disc for illustration in the enlargement. At a given distance from the disc (i.e., along either blue arc) the extent of displacement varies progressively between the superior and inferior vessels shown.