Much Ado about Nothing (or Something)
What Is the Role of Vitrectomy and Yttrium—Aluminum—Garnet Laser for Vitreous Floaters?
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The title of William Shakespeare’s play serves as an appropriate backdrop for discussing the role of vitrectomy and yttrium—aluminum—garnet (YAG) laser vitreolysis for symptomatic vitreous floaters. There has been substantial controversy about the appropriateness of treatment for vitreous floaters. A recent survey of vitreoretinal specialists found that only 25% would recommend vitrectomy for symptomatic floaters, but surgeons who had symptomatic floaters themselves were more likely to recommend this surgery (55% vs. 8%).

Floaters are common, but they vary substantially in severity and in patients’ reactions to them. A community-based smartphone app asked users about floaters and found an incidence of 76% reporting floaters. It is likely people with floaters were more likely to respond to this survey, but only 5% of respondents were over the age of 50, the decade in which posterior vitreous detachments and symptomatic floaters become more common. It is reasonable to assume that most adults have at least some floaters. Only a small percentage of patients have floaters that potentially would be appropriate for treatment.

The article by Sebag et al in this issue of *Ophthalmology Retina* represents a detailed analysis of the results of limited 25-gauge vitrectomy for vitreous floaters, called *vision-degrading vitreopathy* in their article. The authors should be commended for expanding their prior work in this area and continuing to follow up their patients. It is essential to determine the long-term safety of surgical interventions in eyes with good preoperative visual acuities. Seventy-three percent of eyes were followed up for at least 2 years. Their technique intentionally avoided removing the vitreous behind the crystalline lens presumably to attempt to delay the onset of nuclear sclerotic cataracts. They also avoided creating a posterior vitreous detachment and only removed the posterior hyaloid if a vitreous detachment was already present. Their prospective study of 195 eyes in patients did find a significant (but small) improvement in visual acuity from 20/29 to 20/26, but the more important metric was the improvement in contrast sensitivity in a subset of 140 eyes. The patients’ contrast sensitivity with floaters improved by approximately 50%, returning contrast sensitivity to that of healthy controls. They also found a 19.3% improvement in the composite score for the 39-item National Eye Institute Visual Function Questionnaire of patient satisfaction with their visual function. The authors observed a relatively low rate of complications, but some did occur. This included 1.5% with retinal tears and 1.0% each with retinal detachment and macular puckers. These complications often developed many months to years after the surgery, emphasizing the need to monitor these patients and inform them of symptoms that may indicate late problems. In patients with a preoperative vitreous detachment, 9.3% demonstrated a subsequent posterior vitreous detachment that needed to be treated with a second vitrectomy. Cataract surgery had been performed in 16.9% of phakic eyes, but the duration of follow-up was variable, so more cataracts likely will develop over time in this patient population with a mean age of 59 years.

The current series is one of the larger series published, but several other large series also have suggested that vitrectomy for floaters is relatively safe and results in improved visual function and high patient satisfaction. These include a study of 73 eyes in which 88% of patients were satisfied after vitrectomy for floaters. Another study of 110 eyes found that 84% of patients saw no floaters and 9.3% had improved floaters after vitrectomy. A larger study of 186 eyes using 25-gauge vitrectomy found significant improved visual acuity from 20/40 before surgery to 20/25 after surgery, with 94% of patients rating the surgery as a “complete success.” Improved satisfaction after vitrectomy is useful, but almost all ophthalmologists would like to see a quantitative improvement in visual function to feel more comfortable about recommending surgery. It seems contrast sensitivity measurements used in the study by Sebag et al may provide this much-needed metric of improvement after the treatment of vitreous floaters. Posterior vitreous detachment has been shown in another study to decrease contrast sensitivity by 52.5% in a series of 28 eyes. Vitrectomy in a subgroup of these eyes returned the contrast sensitivity to normal, similar to the results in the current study.

Vitrectomy for floaters does carry some rare but visually debilitating complications. These include retinal detachments in 10.9% from one series, 5.5% of eyes in a second series, and—lower yet—2.5% in a third series, although proliferative vitreoretinopathy developed in one eye and a hemorrhagic choroidal detachment developed in the second eye of the lattermost study. Individual case reports have noted endophthalmitis after vitrectomy for vitreous floaters.

Vitrectomy, although effective, is not the only treatment for floaters. Yttrium—aluminum—garnet laser vitreolysis was described first in 1993 with resolution of symptoms in 15 of 15 patients and no reported complications.
Yttrium–aluminum–garnet vitreolysis has become much more popular during the past 5 years and is promoted heavily on the internet. The published literature about YAG vitreolysis is not as extensive, with few large studies in the peer-review literature. One study concluded that YAG vitreolysis was safe, but only moderately effective, with 65.5% of patients appreciating no improvement.13 The Cochrane group attempted to carry out a comparative effectiveness study of vitrectomy for floaters versus YAG vitreolysis and concluded that the literature was not adequate to make any recommendations.14 There has been one subsequent randomized, masked study of YAG vitreolysis for floaters with 32 patients and 16 control participants. The authors concluded that YAG laser vitreolysis did improve symptoms in 54% of patients versus 9% of control participants (P < 0.001), with significant improvements in selected 25-item National Eye Institute Visual Function Questionnaire subfield scores.15 Complications also have been reported after YAG laser vitreolysis, including glaucoma, posterior capsule damage causing cataracts, retinal hemorrhages, retinal detachment, and worsening floaters.16–18

The appropriate use of vitrectomy and YAG laser vitreolysis for symptomatic vitreous floaters remains uncertain. It is a reasonable treatment to recommend after detailed discussion with patients who report about their floaters vigorously. Ophthalmologists should not suggest treatment in patients with prominent floaters who do not report them. Many patients with new-onset floaters secondary to posterior vitreous detachment note improvement in the floaters or adapt to them over time. This suggests that delaying surgery for at least several months is appropriate. A video of the floaters using the infrared image from spectral-domain OCT also may be helpful to allow the physician and patient visualize the floaters (Fig 1; Video 1, available at www.opthalmologyretina.org). Contrast sensitivity testing using the Freiberg vision test described in the article by Sebag et al1 may provide further quantitative evidence of visual impairment. This information can assist in making a decision about whether to recommend vitrectomy or YAG vitreolysis for symptomatic vitreous floaters. Randomized studies with long-term follow-up are needed to define the optimal treatment and to refine the indications for treating symptomatic vitreous floaters.

References

Footnotes and Financial Disclosures

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