

Pearls for YAG vitreolysis of floaters

by Lauren Lipuma EyeWorld Staff Writer

Experts share tips for getting started with the procedure

YAG vitreolysis is a safe, effective, and noninvasive treatment for floaters. Although it is a simple point-and-shoot procedure, it does have a learning curve, and many factors contribute to achieving good visual outcomes.

With little instruction available on the technique, it falls to individual surgeons to share their wisdom with their colleagues. Here, experienced surgeons **Karl Brasse, MD**, Vreden, Germany, and **I. Paul Singh, MD**, in private practice, The Eye Centers of Racine & Kenosha, Wis., share their pearls for getting started with vitreolysis and tips for avoiding potential complications.

Assemble the needed equipment

The first step toward incorporating YAG vitreolysis into practice is to procure the needed equipment—an appropriate Nd:YAG laser and surgical contact lenses. The only YAG laser optimized for treating floaters is the Ultra Q Reflex multimodality laser (Ellex, Adelaide, Australia).

The right contact lenses are crucial to success with YAG vitreolysis. Appropriate contact lenses are available from Volk Optical (Mentor, Ohio) and Ocular Instruments (Bellevue, Wash.). Keep in mind that you'll likely need more than one lens; highly myopic eyes need a lens with a longer focal length, and you'll need an off-axis lens to treat floaters that are not perfectly centered in the vitreous.

Things to know beforehand

Before getting started, read the relevant reference material and familiarize yourself with the procedure. Dr. Brasse recommends purchasing *Laser Treatment of Eye Floaters*, by **John Karickhoff, MD**, the only vitreolysis textbook available. Dr. Karickhoff's book covers everything from laser plasma physics to how to avoid potential complications.

Similar to gonioscopy-assisted surgery, it's important to practice visualization with the contact lenses before getting started, Dr. Singh said. After purchasing the lenses, practice visualizing floaters preoperatively to get used to the view through the lens.

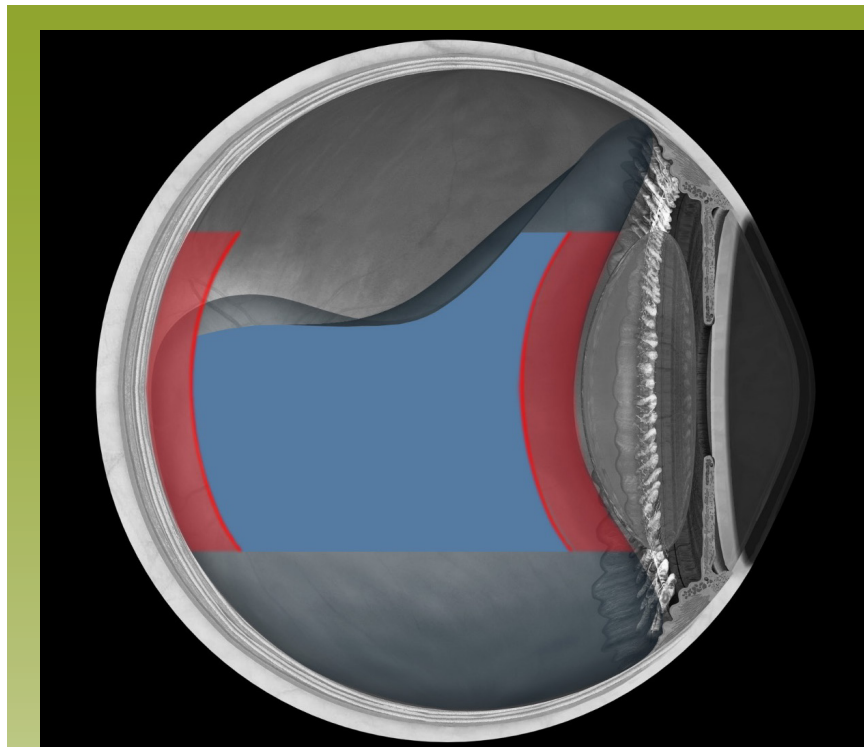
Don't be afraid to use higher laser energies than you're used to. The more matter the laser must travel through, the higher the energy required to break down tissue. For that reason, surgeons will need to use higher energy levels to vaporize floaters than to do a YAG capsulotomy. Dr. Brasse recommends starting with a low energy level (around 2.0–2.5 mJ) and titrating upward until it is high enough to break down the floater material. Be aware that energy levels as high as 4.0–5.0 mJ and even up to 8 mJ may be required to vaporize floaters in the posterior part of the vitreous.

Be aware that a high number of laser shots—potentially up to 1,000—may be needed to completely vaporize the floater. Some physicians may be hesitant to fire more than a few hundred shots for fear of causing a retinal detachment, but fewer shots may not completely break down the floater material. Ellex recommends limiting the number of shots fired in one laser session to 400 and repeating treatment several weeks later if needed.

Start with the easiest cases

Because there is a learning curve associated with this procedure, Drs. Brasse and Singh agreed that choosing the right patient and the right floater are crucial to success when starting out. "The key for me is picking the right patient, picking the right floater, and then practicing beforehand with the visualization," Dr. Singh said.

To avoid causing a traumatic cataract by accidentally hitting the lens or posterior capsule, start with pseudophakic patients. Avoid patients with multifocal lenses, however, because the lens' multiple focal points will divide the YAG laser beam. A divided laser beam makes visualization more difficult. It could also cause the laser to hit other ocular structures and may not



Only treat floaters in the safe zone (blue), at least 3 mm from both the lens and the retina.



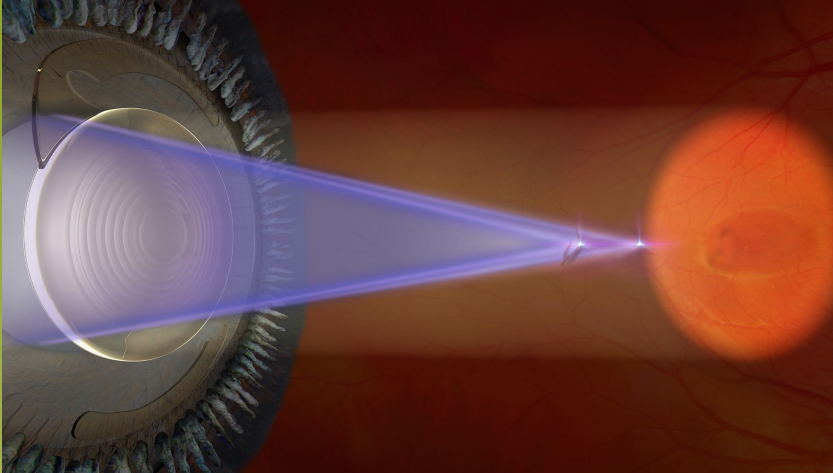
Contact lenses are crucial to success when visualizing and treating floaters. Use a lens with a longer focal length (center) to treat highly myopic eyes and an off-axis lens (right) to treat floaters that are not centered in the vitreous.

achieve enough energy to vaporize the floater.

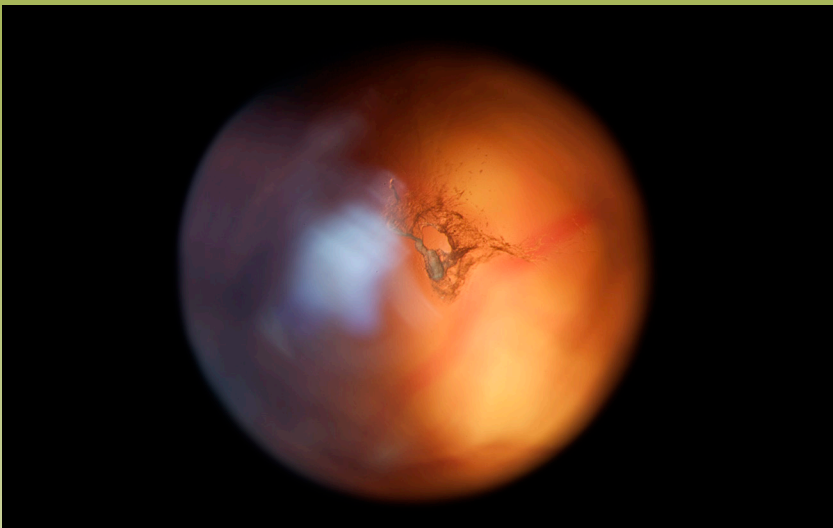
Start with large, fibrous floaters such as Weiss rings that are easy to visualize and vaporize with the laser. Avoid treating the diffuse, cloud-like floaters caused by vitreous syneresis; treat these floaters only after gaining sufficient experience with the laser. Remember that the larger and more amorphous the floater, the more

laser shots and treatment sessions will be needed.

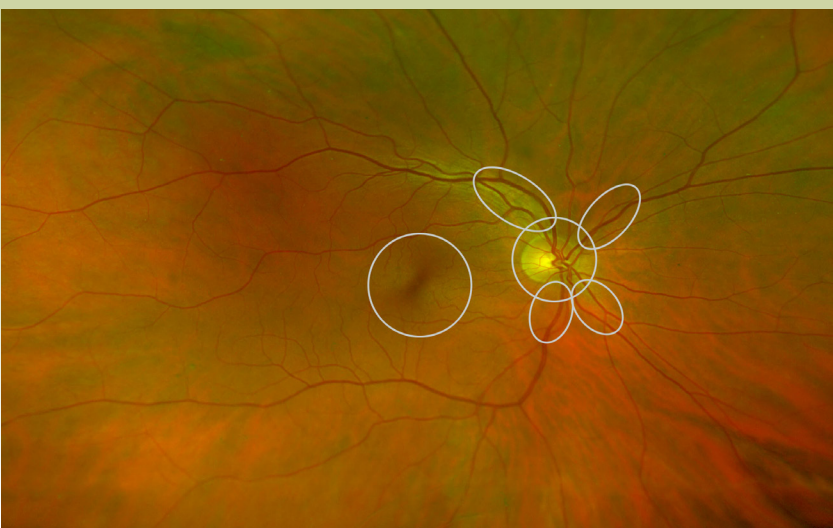
It is important to set expectations ahead of time. If the floaters are larger, denser, and more amorphous, patients need to be aware that they might need multiple sessions. If the floaters are too far posterior, near the retina, or anterior near the lens, patients must be aware that the surgeon may not be



Multifocal IOLs can divide the YAG laser beam, so avoid treating floaters in multifocal IOL patients.



Make sure that the retina is not in focus when visualizing the floater. Start with large, well-defined floaters like the one pictured here.



Avoid treating floaters directly in front of the macula, optic nerve, or major blood vessels (circled in white).

Source (all): Karl Brasse, MD

able to remove the entire floater due to its proximity to the retina or lens.

Surgical technique

Before starting, make sure that the patient has no active inflammation, retinal pathology, or signs of acute posterior vitreous detachment. To avoid causing damage to any ocular structures, only treat floaters in the “safe zone”—at least 3 mm from both the retina and the lens. Dr. Singh’s rule of thumb is that when he can visualize the floater (when it’s in focus), if the retina is also in focus, the floater is too close to the retina to treat.

“If the retina is not in focus, and the floater is in the middle of the vitreous, you’re not going to hit any other structures,” he said.

Make sure that the floater is visible preoperatively at the slit lamp so that you don’t have to search for it after the patient sits down at the laser. If you have trouble finding the floater initially, one of Dr. Singh’s tricks is to ask patients where they’ve seen the floater lately.

“The key in this procedure is visualization,” he said. “If you can’t visualize it, do not do it.”

Often times, Dr. Singh needs to increase the magnification compared to what he normally uses for a YAG capsulotomy. It takes some time to find the right magnification for each surgeon.

Avoid treating in the direction of the macula, optic nerve or blood vessels, and stop treatment if you see corneal edema.

Dr. Brasse recommends treating floater strands in the anterior vitreous first and working posteriorly. In this manner, you can vaporize floaters that may block your view of the posterior structures. Dr. Brasse warns, however, to avoid combining YAG capsulotomy and floater vitreolysis in the same session.

Because the cavitation gas bubbles travel upward, they can block the field of view, so Dr. Brasse recommends starting from the top of the floater and working downward. He also recommends treating floaters from the periphery to the center, so that no particles float away and get lost in the vitreous.

A small percentage of patients do experience pressure spikes after treatment, so Dr. Brasse applies dorzolamide/timolol twice immediately after laser treatment to keep the IOP low. He also prescribes prednisolone 1% eye drops every 30 minutes for the rest of the day, followed by 6 times daily for 1 week. Be sure to examine patients the next day to check visual acuity and IOP. Dr. Singh does not routinely give anti-hypertensive or anti-inflammatory drops postoperatively, but does stress the importance of checking pressures within a couple of weeks. Patients at higher risk for an IOP spike are those patients who are pseudophakic/post-YAG capsulotomy and who have anterior floaters. He thinks the gas bubbles may travel into the anterior chamber and can potentially disrupt the outflow system.

Finding the right patients

Dr. Singh routinely asks patients during the eye exam if they have any issues with floaters. “I don’t go out looking for patients,” Dr. Singh said. “These patients are in your office already. We’ve conditioned our patients to realize that nothing can be done, so patients stop complaining about them. So when you start asking patients, you’ll find them.”

Remember that you don’t have to get rid of every floater for the patient to be visually satisfied, he added. The goal is to achieve a functional improvement in vision so that patients can easily perform their routine day-to-day activities.

For more information, visit Dr. Karickhoff’s website at www.eyefloaters.com or Dr. Brasse’s website at www.floater-vitreolysis.net for presentations he has given on the topic. Visit the Ellex website at www.ellex.com for videos from Dr. Singh and information about the laser and further treatment guidelines. **EW**

Editors’ note: Drs. Singh and Brasse have financial interests with Ellex.

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