

# Assimilating Laser Vitreolysis into Daily Practice

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Until relatively recently, patients suffering from bothersome floaters had only one of two options: learn to tolerate them, or undergo vitrectomy. However, given that the latter option is a highly invasive procedure associated with complications, including infection, macular edema and retinal detachment, many ophthalmologists, understandably, reserved vitrectomy for only the most severe and distressing cases.<sup>1</sup> With the launch of the Ultra Q Reflex™ multi-modality Nd: YAG laser (Ellex, Australia, [ellex.com](http://ellex.com)), ophthalmologists now have access to an innovative solution designed specifically for laser vitreolysis in the treatment of vitreous strands and opacities (floaters).

## A NEW TREATMENT PARADIGM

Laser vitreolysis is a highly effective outpatient-based procedure that can eliminate the visual disturbance caused by floaters. It offers a high degree of patient satisfaction and, unlike vitrectomy, has a low rate of complications.<sup>2</sup>

Although laser vitreolysis is a much safer procedure than vitrectomy, it is generally not taught by medical schools, and because of the technical constraints of conventional YAG lasers, some ophthalmologists are still a little reluctant to offer the procedure to their patients. I myself was initially skeptical about laser vitreolysis.

However, having performed around 400 procedures with the Ultra Q Reflex™, I now realize the impact floaters have on patients' daily life.

We have become accustomed to just ignoring these complaints, but now, with the Ultra Q Reflex™, we finally can take care of these patients. The effect it has on our patients' quality of life is remarkable - I would say on a par with procedures such as cataract surgery and refractive surgery.

With laser vitreolysis we can break up collagen fibers in troublesome floaters in a much quicker and less invasive procedure than conventional

vitrectomy. And if the improvement is not sufficient, retreatment or recourse to vitrectomy is still possible at a later date.

**“The effect it has on our patients' quality of life is remarkable - I would say on a par with procedures such as cataract surgery and refractive surgery.**

There are very few procedures which have such great benefits but with so few risks. In the nearly 400 cases I have performed, there have been no retinal tears or detachments,

no hemorrhages, inflammation, or adverse reactions in the vitreous.

**“There are very few procedures which have such great benefits but with so few risks.”**

**“The results of laser vitreolysis have been extremely gratifying for me, and, most importantly, for my patients.”**

### INTRODUCING ULTRA Q REFLEX

The proprietary cavity design of the Ultra Q Reflex™ produces an Ultra Gaussian pulse, teamed with a fast pulse rise time. This technology enables the Ultra Q Reflex™ to achieve optical breakdown (using a plasma spark to produce a shockwave, which then incises the tissue) at lower energy levels and with fewer shots than other laser systems. Traditional YAG lasers typically have a larger and less controlled plasma due to

their more inconsistent power output. Indeed, the Ultra Q Reflex™ achieves ultra-low energy optical breakdown (in air) of approximately 1.8 mJ in optimal conditions, compared with other Q-switched YAG lasers that typically achieve optical breakdown (in air) at 3 to 4 mJ. Designed to deliver 400,000 laser shots with sustained long-term performance, the Ultra Q Reflex™ avoids the time-related deterioration of laser-pulse delivery often experienced with other Q-switched YAG lasers.

### SURGICAL PEARLS

For surgeons considering offering laser vitreolysis with the Ultra Q Reflex™, my advice for achieving successful outcomes would be to be aware that there is a learning curve involved. For example, when I first began performing laser vitreolysis, I hit the crystalline lens in two patients; one of these patients required cataract surgery. Consequently, I recommend starting out with cases which involve a solitary floater in the middle of the vitreous, i.e., not close to the lens or to the retina, at least until a good degree of comfort with the procedure has been attained. I also recommend initially limiting treatment to pseudophakic patients.

The floater should also be visible preoperatively when viewed through the slit lamp because it's difficult to start chasing floaters once the patient is positioned at the laser.

Surgeons should also be aware that high energy levels may be required, e.g., 4.0 – 5.0 mJ, and they should not be afraid of that.

It's also important to understand that a high number of laser shots will likely be required - potentially up to 900 or even 1000. If only a low number of shots are used, for example, 200, the procedure may not work. I think some doctors are afraid to offer upwards of 500 shots in case they cause a retinal detachment or tear, and this is perhaps one of the reasons behind the perception that laser vitreolysis is not effective. In my experience, however, it's safe to offer more shots than you think you can.

My final piece of advice would be to build realistic patient expectations. For example, if a patient has a particularly dense floater, they need to be informed that it may take up to three sessions to resolve the issue.

In addition, its two-point focusing system maximizes the precision of application, ensuring that only the intended photodisruption target is hit.

The system's cutting-edge light delivery system reduces the risk of collateral ocular tissue damage associated with Nd:YAG laser-based floater treatment by maximizing vitreous illumination. The usability of conventional YAG lasers is often compromised by a limited view of the vitreous. As such, physicians can struggle to identify and focus on the targeted floaters and membranes.

Traditional YAG lasers also have illumination that is delivered from a low, non-coaxial position, which can make it extremely difficult to target the vast array of vitreous opacities in more posterior vitreous locations.

Furthermore, if the slit generator on these systems is used in a coaxial position, the mirror which reflects the illumination beam has to be positioned in the path of the treatment beam. This results in clipping of the laser beam and ultimately leads to a reduction in the amount of energy delivered, particularly deeper in the vitreous where more energy may be required. Designed to overcome this limitation, the proprietary slit lamp illumination tower design of the Ultra Q Reflex™ offers perfect visual

coaxiality by converging user vision, target illumination and the treatment beam along the same optical path and focusing them in the same plane. Coaxial illumination is provided by the system's patent-pending, retractable reflecting mirror, which is designed to move out of the laser pathway during firing mode. With the Ultra Q Reflex™, the laser beam is coaxial for anterior, mid and posterior vitreous treatment applications and is never obstructed. The illumination tower can thus be used coaxially to enhance the view of the target opacity and more effectively vaporize it.

The system's coaxial illumination is also designed to deliver an optimal Red Reflex, further enhancing floater visibility and providing greater depth perception.

These important features are vital when working in the vitreous as they minimize the potential for focusing errors and thereby reduce the risk of damage to the natural lens or the retina. There is also no risk of under-dosing or over-dosing the energy due to poor positioning of the illumination tower, while the precision of the two-point aiming system and the wide offset range ensure accurate positioning of the optical breakdown, thus further protecting surrounding tissue from accidental damage.<sup>3</sup>

### ADDITIONAL BENEFITS

Another important benefit of the Ultra Q Reflex™ is its multi-modality. Optimized for both posterior and anterior YAG laser treatments, the Ultra Q Reflex™ allows surgeons to perform capsulotomies with new-generation intraocular lenses (IOLs), peripheral iridotomies for glaucoma, and to treat vitreous strands - all with one instrument. I have found that with the Ultra Q Reflex™, I don't have to use as much energy for my iridotomies and simple capsulotomies. This in turn reduces the incidence of side effects such as lens pitting, retinal thickening, increased intraocular pressure or collateral damage to surrounding structures.

**Overall, I have been extremely happy with my patients' outcomes following the use of the Ultra Q Reflex™. The results of laser vitreolysis have been extremely gratifying for me, and, most importantly, for my patients.**

## REFERENCES

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