

# Achieving capsulotomy, iridotomy with novel Nd:YAG laser system

Device delivers treatment results using lower energy and fewer shots

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**M**odern cataract surgery can provide good visual outcomes for most patients, thanks to developments in surgical technique, instrumentation, and IOL technology.

Unfortunately, despite advances in lens design and material, clinicians cannot always prevent the main complication associated with cataract surgery: posterior capsule opacification (PCO).

The use of neodymium-doped yttrium aluminum garnet (Nd:YAG) laser capsulotomy allows for a safe and non-invasive method of managing PCO.

Use of the Nd:YAG laser is not limited to capsulotomies.

It is also frequently used to undertake peripheral iridotomies in patients with acute and narrow angle-closure glaucoma. Nd:YAG lasers are also used by some surgeons to vaporise symptomatic vitreous floaters. Not surprisingly, the Nd:YAG laser has become an essential feature of most ophthalmology clinics.

## **Laser choice**

The Nd:YAG laser has come a long way since it was first demonstrated in the 1960s, and there are now several Nd:YAG devices available. Our department recently incorporated a new system (OptoYag M, Optotek Medical; Ljubljana, Slovenia).

The main reason we chose this particular laser was because it enables the best treatment results using lower energy and fewer shots.<sup>1</sup>

Although Nd:YAG capsulotomy is known to have a good safety profile, there is a small risk of complications, including retinal tears and detachment, cystoid macular oedema, IOL damage, iritis, and transient or persistent elevation of IOP.

Findings from numerous studies suggest that side-effects are more pronounced when a high single-pulse energy is used. Consequently, many surgeons perform Nd:YAG capsulotomies at the

lowest possible energy level.<sup>2,7</sup> One of the most helpful features is the system's ability to deliver 30 different energy levels between 0.5 mJ and 10 mJ.

**“One of the most helpful features is the system's ability to deliver 30 different energy levels between 0.5 mJ and 10 mJ.” – Masoud Teimory**

This allows me to precisely adjust the energy in order to match the specific needs of the particular treatment and the patient's eye response.

The system also features a repetition rate of 3 Hz, which affords faster treatment. This feature is not only beneficial for practice productivity, it also increases patients' comfort levels.

Another feature that supports patient ease is the LED slit lamp incorporated into the device. Unlike many other slit lamps, it emits minimal heat, which is important for patient comfort, particularly in those with dry eye.

I have also found this device allows accurate, repeatable, and consistent delivery of energy. Some YAG lasers can be temperamental, particularly in terms of accuracy, but this system has proven to be reliable thanks to the incorporation of pulse-to-pulse stability (PPS) technology which delivers a stable energy

## **IN SHORT**

**► The Nd:YAG laser plays a key part in ophthalmology. However, it is important to select a device that enables the best treatment results using lower energy and fewer shots.**

The system can be moved freely to another worktop and is therefore instantly ready to use.

output that exceeds current industry standards (Figure 1).

Enhanced accuracy and stability of laser energy not only helps to improve safety, it also increases treatment efficacy.

Because the system has a red diode aiming beam with continuous power adjustment that allows precise focusing of the YAG laser, I find I don't need to use a contact lens in most cases, further simplifying the procedure.

Another advantage is that the system has a convenient portable design.

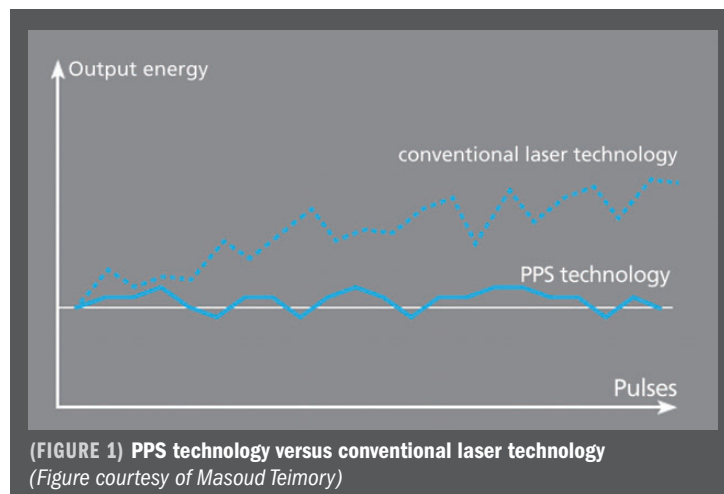
Because the electronics box is positioned under the table, the system can be moved freely to another worktop and is therefore instantly ready to use.

### Clinical experience

We've used the system in hundreds of patients for both capsulotomies and iridotomies. I find that I can achieve a successful capsulotomy at an energy level between 1.0 mJ and 1.6 mJ, typically using only 10 to 12 shots.

For an iridotomy, I tend to use an energy level of 2.5 mJ at two pulses. A study undertaken by Hawlina and Drnovšek-Olup at the University Medical Centre Ljubljana, Slovenia, showed that Nd:YAG laser capsulotomies could be successfully undertaken using the system at an energy level of 1.6 mJ.

In this study, which included 53 eyes of 44 patients (mean



(FIGURE 1) PPS technology versus conventional laser technology (Figure courtesy of Masoud Teimory)

age, 76.49 years; [range, 59 to 89 years]), all procedures were performed with an energy level of 1.6 mJ and an average total energy of 104.72 mJ (range, 27.2 mJ to 320 mJ).

The average number of pulses used was 65.5, ranging from 17 to 200. All treatments were successful.<sup>1</sup>

Although I haven't conducted a formal study of this laser, my capsulotomy patients generally report immediate improvements in PCO symptoms.

Moreover, I haven't had to repeat the procedure in any patient and there have been no serious complications.

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