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With Years of SLT Data, Why Consider MLT?

The benefits of MicroPulse technology.

The following article summarizes an educational webinar on MicroPulse Laser Trabeculoplasty (MLT) presented by Iqbal "Ike" Ahmed, MD; David Gossage, DO; and Steven Vold, MD. The webinar may be viewed in its entirety at http://eyetube.net/?v=nohog.

THE CHANGING PARADIGM OF GLAUCOMA THERAPY

Innovations in laser technology and microinvasive surgery for managing glaucoma are encouraging many physicians to rethink, "What is maximal tolerated medical therapy?" Iqbal "Ike" Ahmed, MD, of Toronto, says that the term *interventional glaucoma* is used to describe a paradigm shift that suggests that glaucoma may be best treated with these alternative innovations rather than pharmaceutical therapy. One such innovation is MicroPulse Laser Trabeculoplasty (MLT; IRIDEX Corporation). MicroPulse is an advanced laser technology that breaks up a continuous-wave (CW) laser beam into very small, repetitive micropulses, which allow energy to be delivered with intermittent cooling periods. The cooling periods reduce thermal buildup and tissue damage, while inducing beneficial biological effects. In the treatment of diabetic macular edema, the clinical efficacy of MicroPulse has shown greater confinement of photothermal effects and outcomes equal to or better than standard CW laser therapy, with little or no collateral damage.[1,2] MLT is effective without the signs of thermal damage seen in traditional argon laser trabeculoplasty (ALT), as this panel of ophthalmic surgeons discusses.

MLT SHOWS 30% DROP IN IOP

Both David D. Gossage, DO, and Steven D. Vold, MD, have had ample experience performing 532-nm MLT using the IQ 532 laser system (IRIDEX Corporation). Dr. Gossage performed three MLT studies on patients who presented with open-angle glaucoma. All studies used the same treatment parameters: 300-µm spot size, 300-ms duration, and 15% duty cycle (Table 1). However, each study incorporated a different power: 300 mW (13 eyes of 13 patients), 700 mW (14 eyes of 14 patients), and 1,000 mW (18 eyes of 18 patients). The 1,000-mW study included a range of patient histories—those with no previous laser treatment; those who had undergone previous ALT or MLT; and some who had been on IOP-lowering medications. Comparing the outcomes of these studies, a power setting of 1,000 mW generated the greatest reduction of IOP at 1 and 4 months (Figure 1). Dr. Gossage commented, "Even at the highest power, I know that I'm not causing any thermal damage to the trabecular meshwork, and also I'm getting the effect I desire."

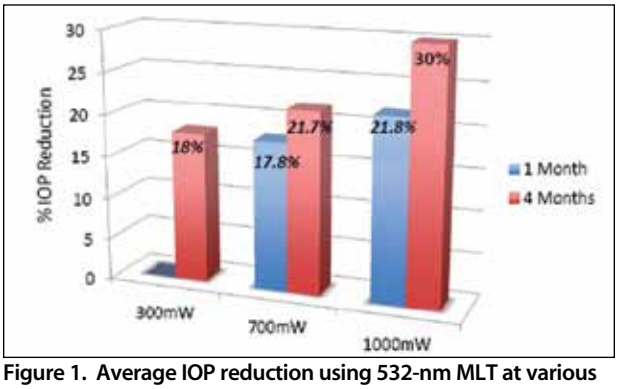

Figure 1. Average IOP reduction using 532-nm MLT at various powers. Subjects achieved a 30% IOP reduction with 1,000 mW at 4 months.

Dr. Vold initially used 700 and 800 mW of power for approximately 6 months before switching to 1,000 mW. At the lower powers, he achieved approximately a 50% response rate, versus a nearly 80% response rate using 1,000 mW. He stated, "[When using 1,000 mW,] the effect is comparable to that with SLT and ALT in my hands, and I suspect that the higher power will provide a longer-lasting effect." Because he works in a tertiary care center, Dr. Vold's glaucoma patients are typically on many medications. He has found that with the higher power, he can usually reduce patients' medications by one.

TABLE 1. 532-NM MLT TREATMENT GUIDELINES USED BY DRS. AHMED, GOSSAGE, AND VOLD

Laser: IRIDEX IQ 532
Wavelength: 532 nm
SLA Spot Size: 300 µm
Contact Lens: Ritch 4-mirror
Power: 1,000 mW
Duration: 300 ms
Duty Cycle: 15%
Technique: Place confluent applications 360° around the eye. There are no visual signs of treatment intra- or postoperatively. No postoperative medication is necessary. Follow up at approximately 1 month, based on the level of severity.

TABLE 2. MLT & SLT SIMILARITIES, DIFFERENCES	
MLT	**SLT**
532-nm and 577-nm wavelengths	532-nm wavelength
Thermally effects (not destroys) pigmented trabecular meshwork cells without thermal or collateral damage.	Selective destruction of pigmented trabecular meshwork cells without thermal or collateral damage.
Repeatable	Repeatable
No visible signs of treatment intra- or postoperatively	Visible signs of treatment intra- and postoperatively
No postoperative inflammation	Postoperative inflammation
300-µm spot size*	400-µm spot size
Minimal to no complications	Postoperative IOP spikes are possible
Multifunctional: CW and MicroPulse applications for glaucoma and retinal disorders	Single application: SLT

**Smaller spot to access narrow angles*

MLT & SLT SIMILARITIES, DIFFERENCES

In recent years, SLT has gained ground as a treatment option in glaucoma. Now, with the advent of MLT, it is helpful to understand the similarities and differences between these modalities (Table 2).

MLT and SLT are easy to learn, may reduce dependence on topical medications, can be used earlier in glaucoma management, and are repeatable. Where MLT differs from SLT is that MLT thermally affects (not destroys) pigmented trabecular meshwork cells without thermal or collateral damage. Also, MLT is potentially more titratable than SLT, giving surgeons greater control. Whereas SLT only permits control over pulse energy, MLT allows surgeons to adjust the on/off times and the speed of the MicroPulse's repetition. In Dr. Vold's experience, MLT offers a lower rate of postoperative inflammation and fewer complications than SLT. Dr. Vold comments, "Most importantly, I have not seen a single spike in IOP with the MLT treatment, a safety profile that I consider unprecedented in laser trabeculoplasty."

Another important difference between the two is the functionality of the laser systems used to perform trabeculoplasty. The laser used for SLT is a dedicated system for this single procedure, whereas the laser systems used for MLT also can perform various CW and MicroPulse treatments for other glaucoma-related indications (such as suture lysis) as well as several retinovascular indications (such as diabetic macular edema); and it is less expensive.

Webinar Q&As

- What is the efficacy of MLT in pseudophakic patients and patients who've had previous filtering surgery?
- What is the biggest risk of MLT, and how do you get comfortable with it?
- What would SLT users expect moving over to MLT?

And more…

Get the answers by watching the complete webinar at http://eyetube.net/?v=nohog

WHY CHOOSE MLT?

MLT offers advantages over other forms of trabeculoplasty. Drs. Gossage and Vold personally chose MLT as their preferred first-line laser treatment option for glaucoma, because MLT demonstrates excellent IOP-lowering efficacy and less tissue damage than other laser modalities, thus reducing the risk of postoperative IOP spikes and inflammation. Reducing the need for postoperative glaucoma medication saves patients money, time, and anxiety over compliance. Lastly, the IQ 532 laser is a portable, reliable, multifunctional device that can be used in a wide variety of anterior and posterior CW and MicroPulse applications, making it a smart choice for ophthalmologists. ■

Iqbal Ike K. Ahmed, MD, is an assistant professor at the University of Toronto and a clinical assistant professor at the University of Utah in Salt Lake City. He acknowledged no financial interest in the product or company mentioned herein. Dr. Ahmed may be reached at (905) 820-3937; ike.ahmed@utoronto.ca.

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