

Pattern scanning shows promise in lowering intraocular pressure

Although similar in efficacy and safety to SLT, PSLT may offer advantages

Dr Christopher Leung



The goal in the management of patients with glaucoma is to preserve the visual field and the integrity of the optic nerve by lowering intraocular pressure (IOP). There are different ways to reduce IOP in patients with primary open-angle glaucoma (POAG), including medications, lasers and surgery.

From the armamentarium of IOP-lowering medications, the prostaglandin analogue is generally accepted as the first-line medical therapy. Augmentation of IOP-lowering therapy is needed when the patient's IOP is not in an acceptable range and/or there is evidence of disease deterioration.

Laser advancements

Selective laser trabeculoplasty (SLT) was introduced in the late 1990s¹ as an alternative to argon laser trabeculoplasty^{2,4}. SLT uses a Q-switched, frequency-doubled 532-nm Nd:YAG laser to selectively target pigmented trabecular meshwork (TM) cells without damaging the TM or nonpigmented cells.

SLT is repeatable. It has been demonstrated to be effective as primary treatment for POAG as well as an adjunct in early glaucoma treatment.^{5,6} Today, SLT is the most common form of laser treatment for IOP reduction.

Pattern scanning laser trabeculoplasty or PSLT (Topcon) is a computer-guided pattern scanning

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laser system that provides rapid, tissue-sparing delivery of optically pumped semiconductor 577-nm laser treatment to the TM. The calculated alignment of the pattern ensures that the treatment spots do not overlap.

Treatment is typically administered in 32 steps, each with three rows of evenly spaced laser spots, for 360° of the TM. The laser rotates the aiming beams automatically.

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Dr Mansouri and colleagues recently conducted a randomised controlled trial comparing PSLT and SLT for IOP reduction in 58 eyes of 29 patients with primary and secondary OAG.⁷ Patients' mean age was 54.1 ± 15.5 years, and the baseline IOP was similar between the two groups (PSLT, 17.3 ± 4.0 mm Hg; SLT, 16.8 ± 3.6 mm Hg, $P > 0.05$).

MEDICATIONS VERSUS LASER: FIRST-LINE THERAPY

DR LEUNG:

“Medications are considered standard first-line therapy for lowering IOP lowering; however, some patients who cannot take drops may be considered for laser therapy instead. Patients may be allergic to medication ingredients or have hyperemia. For these individuals, a laser procedure is a very good alternative. In some cases, patients may still require additional IOP-lowering medication; repeat laser treatment is also an option.”

“Some patients respond well to initial laser treatments and their IOP may remain at a safe level for many years. We do not, however, know at this point which patients will respond better to which intervention. I do believe that both treatment modalities can be given as first-line therapy. Laser may be a better option for patients who are more likely to develop hyperemia or allergic reactions or who are not able to take medications.”

IN SHORT

► Compared with SLT, PSLT appears to offer some advantages, such as a shorter duration of treatment and more comfort for patients.

While IOP reduction was greater in the PSLT group than the SLT group at 1 month and 3 months, IOP levels were similar between the two treatment arms at 6 months (14.0 ±2.7 mm Hg and 13.7 ±3.1 mm Hg, respectively). Patients' self-reported comfort level, however, was better for patients treated with PSLT than those treated with SLT.

Ongoing study

In Hong Kong, we are currently conducting a 1-year randomised controlled trial comparing PSLT and SLT for IOP reduction in 138 Chinese patients with POAG. This study will give us a better picture about the long-term efficacy and safety between the two laser treatment options.

Conclusion

Compared with SLT, PSLT appears to offer some advantages, such as a shorter duration of treatment and more comfort for patients. Longer-term data will further our understanding of the IOP lowering effect and safety profile of PSLT.

REFERENCES

1. Latina MA, et al. Q-switched 532-nm Nd:YAG laser trabeculoplasty (selective laser trabeculoplasty): a multicenter, pilot, clinical study. *Ophthalmology*. 1998;105:2082-2088.
2. Juzych MS, et al. Comparison of long-term outcomes of selective laser trabeculoplasty versus argon laser trabeculoplasty in open-angle glaucoma. *Ophthalmology*. 2004;111: 1853-1859.
3. Damji KF, et al. Selective laser trabeculoplasty versus argon laser trabeculoplasty: results from a 1-year randomised clinical trial. *Br J Ophthalmol*. 2006;90:1490-1494.
4. Liu Y, Birt CM. Argon versus selective laser trabeculoplasty in younger patients: 2-year results. *J Glaucoma*. 2012;21:112-115.
5. Wang H, et al. Meta-analysis of selective laser trabeculoplasty with argon laser trabeculoplasty in the treatment of open-angle glaucoma. *Can J Ophthalmol*. 2013;48:186-192.
6. Samples JR, et al. Laser trabeculoplasty for open-angle glaucoma: a report by the American academy of ophthalmology. *Ophthalmology*. 2011;118:2296-2302.
7. Mansouri K, Shaarawy T. *Acta Ophthalmologica*. 2017;95:e361-e365.

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