

Micropulse Laser Trabeculoplasty After Previous Laser Trabeculoplasty

BY TAK YEE TANIA TAI, MD

CASE PRESENTATION

A 67-year-old man was referred to me for advanced primary open-angle glaucoma. The patient's visual acuity was 20/25 in the right eye and count fingers at 3 feet in the left eye. He had very mild cataracts in both eyes. A Humphrey 10-2 visual field test (Carl Zeiss Meditec) showed severe constriction that was greater in the left eye. Advanced cupping of the optic disc was present in both eyes, and the IOP was 20 mm Hg in each eye (Figures 1 and 2).

The patient noted that he had been using timolol-brimonidine (Combigan; Allergan) and travoprost (Travatan; Alcon) in both eyes for an extended period of time. Considering the advanced nerve damage, I felt the IOP needed to be lowered further. The patient lived

in Jamaica and traveled frequently, so I first attempted to maximize his medical regimen as much as possible. I started him on methazolamide 50 mg once daily (he was unable to tolerate more frequent dosing), but the IOP in both eyes remained in the high teens.

In February 2013, I performed selective laser trabeculoplasty (SLT) on the patient's left eye. I treated 270° with 75 spots, ranging from 0.5 to 0.7 mJ per spot. I decided against a 360° SLT treatment due to the potentially higher risk of an IOP spike after this procedure with a greater area of laser application.¹ The patient responded well, and the IOP decreased to 13 mm Hg in the left eye. I treated the right eye with the same protocol in April 2013, after which the IOP in both eyes measured between 12 and 13 mm Hg. Because of the patient's advanced optic nerve damage

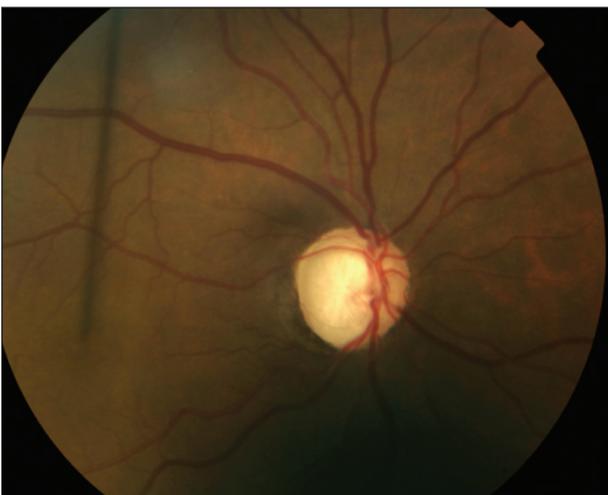


Figure 1. Representation of the patient's right optic nerve head preoperatively.

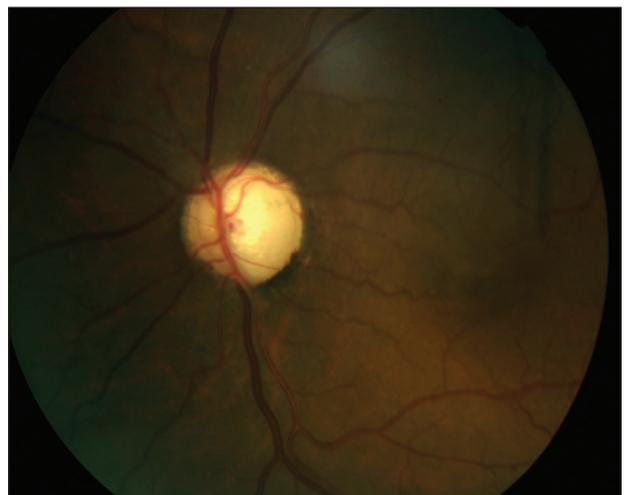


Figure 2. Representation of the patient's left optic nerve head preoperatively.

from glaucoma, his glaucoma medications were continued after the laser procedure. His IOP remained in the low teens for 1 year and then climbed to 19 mm Hg in the right eye in April 2014.

HOW WOULD YOU PROCEED?

- Would you continue medical management? If so, would you choose different medications?
- Would you choose a surgical course? Why or why not?
- Would you perform SLT again? If not, what other options would you choose?

TREATMENT COURSE

Surgery presented several concerns for this patient, including difficulty maintaining the pre- and postoperative schedule due to his travels and the risks of other complications, including permanent vision loss.² Had I chosen to perform surgery, I would have considered a trabeculectomy before glaucoma drainage devices.

Instead, I opted to try another laser procedure to see if a lower IOP could once again be achieved without a more invasive surgery. The options I considered were argon laser trabeculoplasty (ALT), repeat SLT, or micropulse laser trabeculoplasty (MLT). ALT may cause more damaging effects on tissue as compared to SLT and MLT.^{3,4} Although SLT has gained popularity over the past few years, it can still cause IOP spikes and, rarely, mild inflammation and pain.¹ In addition, the SLT effect lasted only 1 year in the right eye of this patient. Like SLT, MLT, which uses short repetitive laser pulses that allow the tissue to cool between pulses, does not cause noticeable coagulative damage to the trabecular meshwork on scanning electron microscopy⁴ and may be repeatable.

I chose to perform MLT on the right eye using a 532-nm wavelength, a 300- μ m spot size, and 1,000 mW at a 15% duty cycle. I applied 75 spots along the same 270° of the trabecular meshwork as previously treated with SLT.

OUTCOME

After MLT, the IOP in the right eye dropped from 19 to 13 mm Hg and has been stable for 6 months. The pressure in the patient's left eye has remained low.

DISCUSSION

The option to treat glaucoma without incisional surgery is of enormous benefit, especially for those patients in whom surgery's risks outweigh the advantages. For patients such as this one, with advanced disease and IOP spikes and for whom pharmaceutical treatments and previous laser treatments have failed, MLT is a viable

option. I have not seen any inflammation after MLT, as I have seen with other laser treatments.

Should the patient's IOP rise again, I would consider repeat MLT. I would deliver applications to the quadrant that was not treated the first time. Because gonioscopy revealed no lasting damage to the trabecular meshwork after MLT, as can be seen after ALT, I would feel comfortable repeating MLT.^{3,4} ■

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