Striking Results Achieved with MicroPulse™ Laser Therapy in Patients with Persistent Central Serous Retinopathy

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Central serous retinopathy (CSR) affects primarily males 20 to 50 years of age, but can be seen in patients of all ages. Typically, it is characterized by a serous detachment of the neurosensory retina that occurs through the retinal pigment epithelium (RPE) over an area of leakage from the choriocapillaris. In a majority of cases, CSR resolves without treatment in 3 to 6 months. However, in some cases, persistent subretinal fluid requires intervention in order to restore visual function and prevent progressive RPE atrophy and permanent vision loss. When the source of leakage can be identified by fluorescein angiography (FA), thermal laser can be applied. However, this is often avoided if the leakage is close to the fovea due to the laser's propensity to cause scarring and scotoma. Photodynamic therapy has been used to treat CSR with some success, but it too carries certain risks and undesirable effects. Topical dorzolamide, oral finasteride and intravitreal anti-VEGF agents have been considered to have some benefit for CSR, but their effectiveness is controversial.

Intuitively, MicroPulse laser therapy is a better treatment for CSR given that its mechanism of action is to target the RPE, perhaps stimulating it to pump out excess fluid. Furthermore, there is ample evidence that MicroPulse causes no damage to retinal tissue. Based on this rationale and the published studies showing MicroPulse's ability to safely improve retinal anatomy and visual acuity (VA) in CSR,[1-4] I recently used it to treat two persistent cases of CSR.

TWO PATIENTS, ONE SOLUTION

Patient 1 is a 54-year-old male with CSR who had a history of bullous CSR and a large persistent neurosensory detachment in the left eye for 10 months after initial presentation. He had been treated previously with oral acetazolamide with no effect. FA demonstrated three distinct areas of leakage (Figure 1), two of which were close to the fovea, so thermal laser treatment was not a good option.

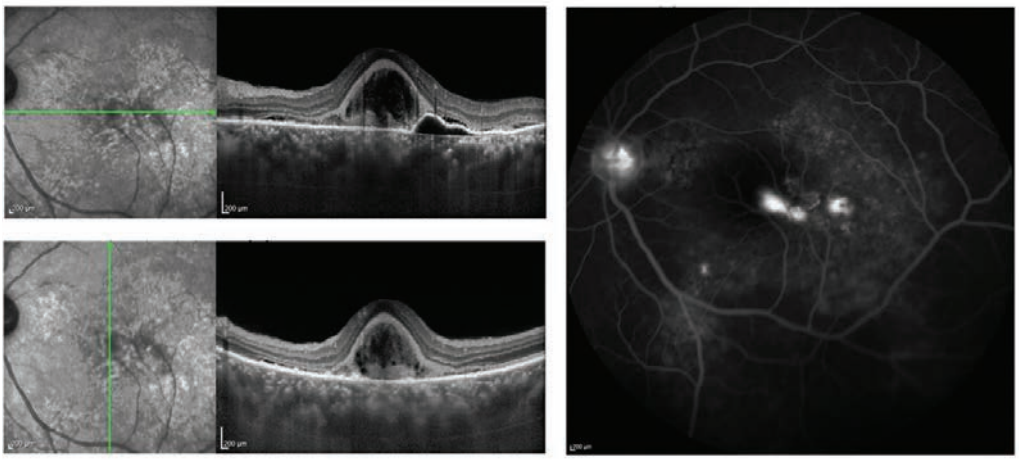

Figure 1. Patient 1, left eye, day of MicroPulse SD-OCT | late FA (three distinct areas of leakage).

Patient 2 is a 59-year-old male with a history of chronic (>10 years) unresolved subretinal fluid involving the fovea in the right eye (Figure 6). His best-corrected VA in that eye was only mildly reduced (20/40-), but as an artist he desired distortion-free vision. He had received no previous treatment.

TXCELL-GUIDED MICROPULSE DELIVERY

I treated both patients with MicroPulse using the IRIDEX IQ 577™ (yellow) laser, achieving marked resolution of subretinal fluid and improvement in VA. Rather than perform a test burn in continuous-wave mode prior to MicroPulse, I used established parameters achieved by more experienced MicroPulse users. The parameters were the same in both cases (Table 1), except in Patient 1, I delivered the laser pulses in three 7x7 treatment grids (Figure 2), and in Patient 2, I used nine 7x7 treatment grids (Figure 6). In both cases I treated all areas of leakage or fluid, including through the fovea. I used the TxCell™ Scanning Laser Delivery System to accurately and efficiently guide the spot placements.

In both patients, marked improvements in central macular thickness (CMT) and VA were seen at one and two weeks after MicroPulse (Figures 3, 4 and 7). In Patient 1, at 4 months, CMT improved from 640 µm to 204 µm and VA improved from 20/200 to 20/25- with complete resolution of subretinal fluid (Figure 5). Patient 2's VA improved from 20/40-2 to 20/30+ by 4 weeks after MicroPulse (Figure 7). Even though VA increased by just one line, this patient was very pleased with his improved visual function and color vision, in particular while working on his paintings.

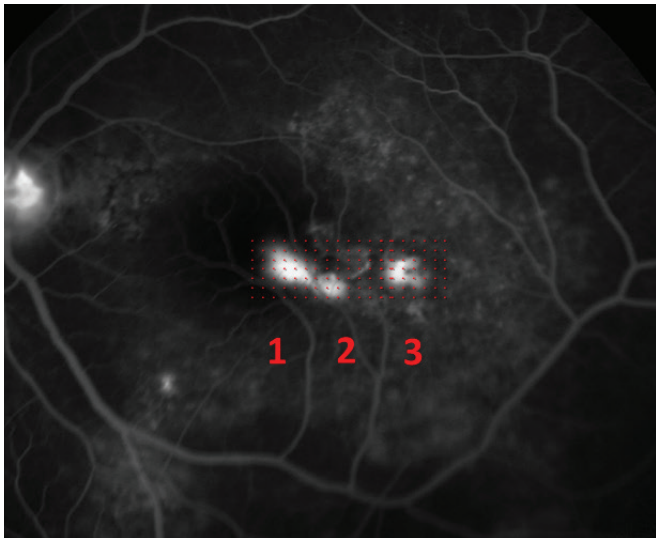

Figure 2. For Patient 1, the TxCell Scanning Laser Delivery System helped to guide laser spot placement in three 7x7 treatment grids (each 7x7 grid = 2.0mm^2 area): 3 squared patterns placed confluently, including in the fovea.

For me, these two cases clearly illustrate that striking results can be achieved with MicroPulse in patients with persistent CSR. Based on this initial experience, I am likely to try this treatment in patients with acute CSR when the situation calls for intervention. I will also consider using MicroPulse for other exudative retinal conditions, especially those that involve the RPE. ■

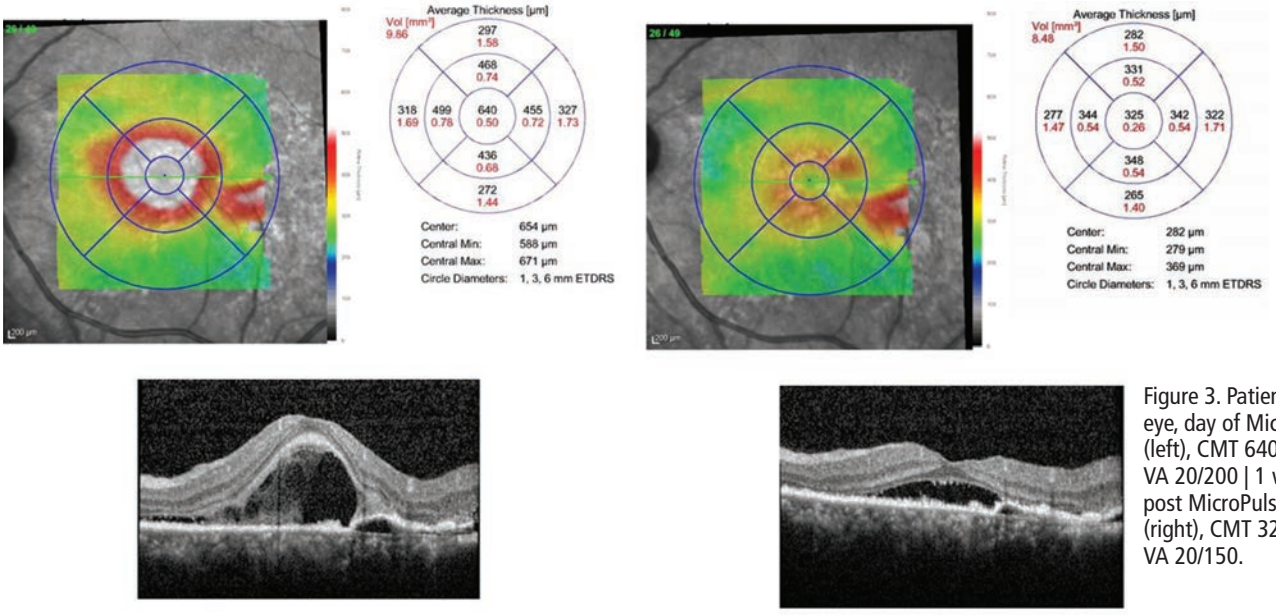

Figure 3. Patient 1, left eye, day of MicroPulse (left), CMT 640 µm, VA 20/200 | 1 week post MicroPulse (right), CMT 325 µm, VA 20/150.

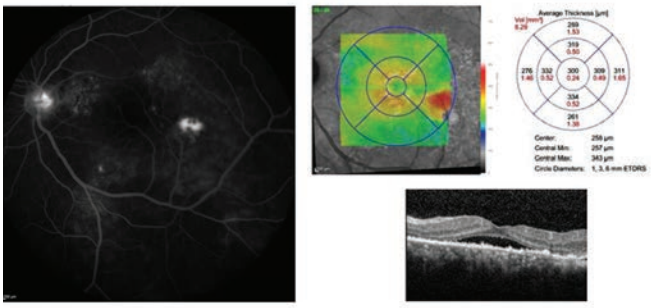

Figure 4. Patient 1, left eye, 2 weeks post MicroPulse | FA leakage considerably decreased | CMT 300 µm | VA 20/70.

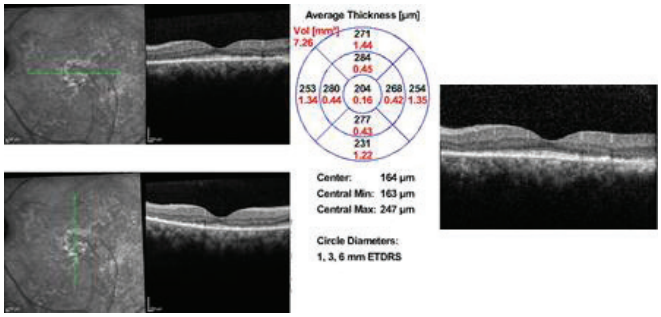

Figure 5. Patient 1, left eye, 4 months post MicroPulse | CMT 204 µm VA 20/25- (complete resolution of subretinal fluid).

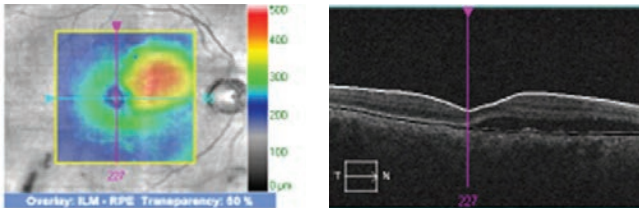

Figure 6. For Patient 2, nine 7x7 treatment grids were applied to cover the entire area of elevation, including in the fovea.

Table 1. TREATMENT PARAMETERS

IRIDEX IQ 577 with TxCell-Guided MicroPulse for CSR

- Wavelength: 577 nm
- Spot size on slit lamp adapter: 200 µm
- Contact lens: Mainster Standard Focal/Grid Lens
- Power: 400 mW
- Exposure duration: 200 ms
- Duty cycle: 5%
- TxCell-Guided MicroPulse delivery: high-density, confluent (zero spacing) applied to all areas of leakage or subretinal fluid. Patient 1: Three 7x7 treatment grids (147 spots). Patient 2: Nine 7x7 treatment grids (441) spots.

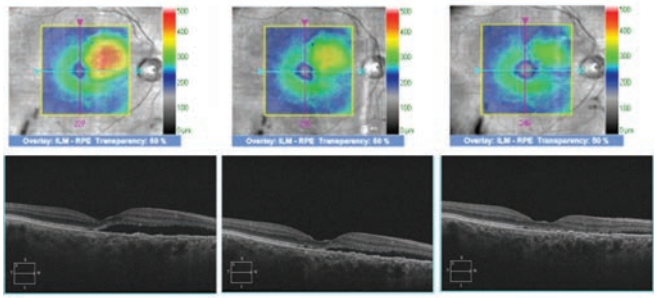

Figure 7. Patient 2, right eye, day of MicroPulse (left), VA 20/40-2 2 weeks post MicroPulse (middle), VA 20/40 | 4 weeks post MicroPulse (right), VA 20/30+ (resolution of subfoveal fluid).

To learn more about MicroPulse, go to www.iridex.com/micropulse

REFERENCES

1. Koss MJ, et al. Subthreshold diode laser micropulse photocoagulation versus intravitreal injections of bevacizumab in the treatment of central serous chorioretinopathy. *Eye* (Lond). 2012;26(2):307-314.
2. Roisman L, et al. Micropulse diode laser treatment for chronic central serous chorioretinopathy: a randomized pilot trial. *Ophthalmic Surg Lasers Imaging Retina.* 2013;44(5):465-470.
3. Gupta B, et al. Micropulse diode laser photocoagulation for central serous chorio-retinopathy. *Clin Experiment Ophthalmol.* 2009;37(8):801-805.
4. Lanzetta P, et al. Nonvisible subthreshold micropulse diode laser (810 nm) treatment of central serous chorioretinopathy. A pilot study. *Eur J Ophthalmol.* 2008;18(6):934-940.

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