

NAVIGATED MICROSECOND LASER FOR RECURRENT CSCR WITH SUBFOVEAL LEAKS

In a case report, one laser session resolved fluid and improved visual function.

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Conventional focal laser has been the gold standard for treatment of central serous chorioretinopathy (CSCR) with extrafoveal leaks on fluorescein angiography (FA). However,

this treatment is contraindicated in cases of CSCR with either subfoveal or juxtafoveal leakage, due to fear of scar expansion and associated vision loss. In such a scenario, the only treatment modality other than observation that was available until recently was photodynamic therapy (PDT). High cost and associated risk of retinal pigment epithelial atrophy are always concerns with PDT. An alternative treatment, subthreshold laser, is now available.¹⁻³

ENTER THE SUBTHRESHOLD LASER

In subthreshold laser treatments low laser energy levels are used with the aim of causing sublethal injury to targeted areas of the retinal pigment epithelium (RPE), rather than destroying the tissue with standard laser. The rationale for use of this modality is based on the hypothesis that the benefits of photocoagulation are derived from cytokine release by recovering RPE cells.⁴ In micropulse mode, laser energy is delivered in ultrashort pulses (microseconds) that are shorter than the thermal relaxation time of the target tissue. Because the resulting temperature rise is insufficient to cause ancillary damage to the surrounding retinal tissue, scarring is minimized to the extent that laser spots are generally undetectable on ophthalmic and angiographic examination.⁴

For macular disorders, either green (495-570 nm) or yellow (570-590 nm) laser wavelengths are suitable, as both are well absorbed by melanin and hemoglobin but only minimally absorbed by macular xanthophylls. In 2008, the first compact, cost-effective solid-state diode yellow 577 nm laser was introduced into clinical retina practice.⁵ Now several devices are available that can deliver micropulse laser energy at 577 nm, either as a single spot or in a preselected grid

pattern. Available devices include the Iridex IQ 577 (Iridex), Navilas (OD-OS), and SupraScan (Quantel) laser systems.

Navigated 577-nm yellow microsecond laser with the Navilas laser system provides the benefits of computerized laser planning using FA, accurate laser application, a wide range of duty cycle options (5%, 10%, or 15%), and variable spot spacing (ranging from confluent to 2 burn-widths apart). The system also provides detailed reports with images that can be used to guide retreatment, if necessary.

We report a case of a patient with recurrent CSCR with subfoveal leakage who was treated successfully with navigated 577-nm yellow micropulse focal laser to the leak. Complete resolution of subretinal fluid was observed on follow-up visits and maintained until the last visit at 6 months after laser without any recurrence.

CASE REPORT

A 29-year old healthy man presented to our practice with the chief complaint of mild distortion of vision in his right eye (OD) for 1 year. He related a history of a similar episode 2 years prior, at which time he was diagnosed as having acute CSCR elsewhere (ie, not in the macula) OD, for which he was observed.



AT A GLANCE

- Subthreshold laser uses low laser energy to cause sublethal injury to targeted areas of the RPE, rather than destroying the tissue with standard laser.
- With micropulse treatment, scarring is minimized so that laser spots are generally undetectable.
- The authors report a case in which a patient with recurrent CSCR with subfoveal leakage was treated successfully with navigated 577-nm micropulse focal laser.

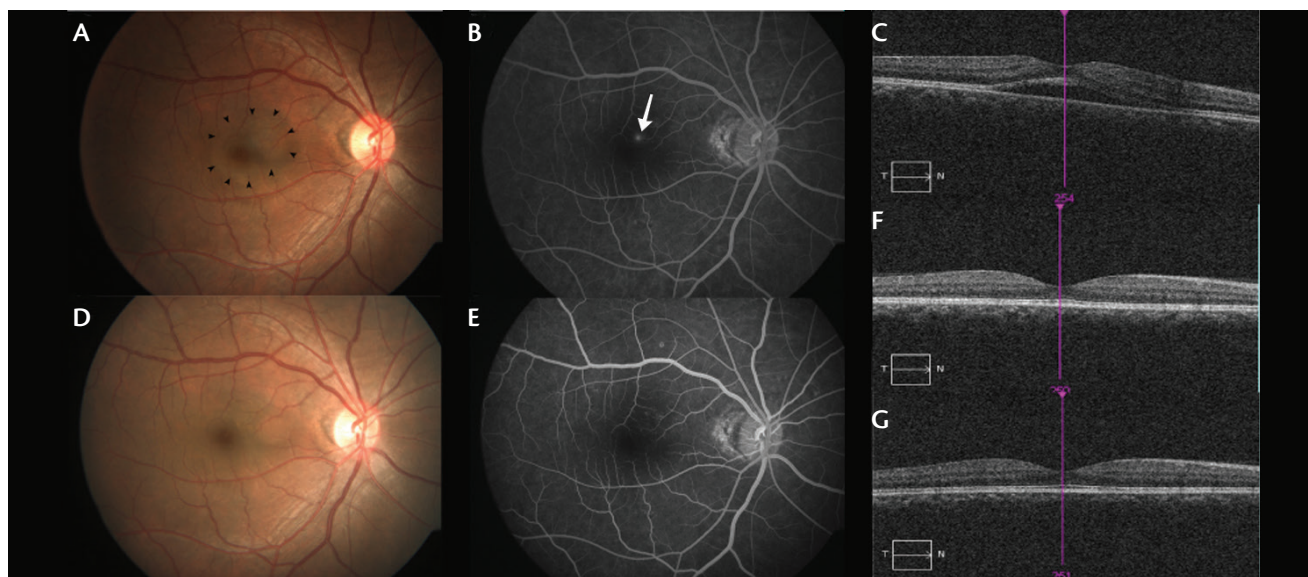


Figure: Baseline color photograph (A) shows subretinal fluid (arrowheads) with leakage on fluorescein angiography (B, arrow) and neurosensory detachment on SD-OCT (C). At 1 month after micropulse laser treatment, no subretinal fluid is seen on color photograph (D) and no active leak on angiography (E). SD-OCT showed no fluid at 1-month (F) and 6-month follow-ups (G).

His BCVA at presentation to our practice was 20/20 OD on the Snellen chart, but he reported wavy lines on Amsler grid testing. Anterior segment findings in each eye were within normal limits. Fundus examination OD showed localized subretinal fluid with RPE changes (Figure, A, arrowheads) involving the fovea. The left eye appeared normal. Spectral-domain optical coherence tomography (SD-OCT) at baseline showed a neurosensory detachment (NSD) at the fovea OD (Figure, C).

Fundus FA with the Navilas system demonstrated a single pinpoint of hyperfluorescence in the subfoveal region OD in the early phase (Figure, B, arrow), with increases in size and intensity in later phases, confirming the diagnosis of acute recurrent CSCR with subfoveal leakage.

Because the leak was subfoveal, microsecond focal laser guided by Navilas fundus FA was performed. Laser settings were as follows: energy, 480 mW; spot size, 100 μ m; duration, 100 ms; spot pattern, confluent grid of five; duty cycle, 5%.

By the first follow-up visit 1 month later, subretinal fluid had resolved clinically (Figure, D) and BCVA was maintained at 20/20 with improved quality of vision as reported by the patient. SD-OCT showed complete resolution of NSD with no active leakage on fundus FA (Figure, E). On subsequent visits at 3 and 6 months after laser, BCVA was stable at 20/20 with no signs of activity on SD-OCT (Figure, F and G).

DISCUSSION AND CONCLUSION

Chen et al reported the results of treating 26 eyes of 25 patients with persistent CSCR and juxtafoveal leakage longer than 4 months duration with subthreshold diode laser photocoagulation.¹ All patients were followed for at least 6 months. All patients had total resorption of subretinal fluid after a single session of subthreshold laser photocoagulation. At final follow-up, average foveal thickness was reduced by more than

half from baseline preoperative thickness. A gain of visual acuity of 3 lines or more was achieved in 15 eyes (57.7%), and a gain of between 1 and 3 lines was achieved in six eyes (23.1%).

Our patient responded very well after a single session of microsecond laser and did not show any recurrence in up to 6 months follow-up. Navigated 577-nm microsecond laser appears to be a safe and cost-effective treatment modality for CSCR with subfoveal leakage when conventional laser is contraindicated. Further evaluation of patients with micropertimetry and longer follow-up could be informative. ■

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