

**Diabetic retinopathy**

# Multi-spot laser delivery facilitates PRP

Reduced treatment duration, lower impact energy means less pain, greater patient comfort

**By Nancy M. Holekamp, MD**  
Special to *Ophthalmology Times*

**W**hen it comes to managing diabetic retinopathy in patients, various treatment options are available, even for patients with advanced retinopathy. These options include laser surgery, corticosteroid or anti-vascular endothelial growth factor (VEGF) injections, and vitrectomy procedures.

**Take-Home Message**

Targeted retinal photocoagulation enables surgeons to treat the areas of retinal non-perfusion directly and offers the only long-term solution for ischemic diabetic retinopathy. This is facilitated by a multi-spot laser delivery system.

Among retina specialists, there may be a growing trend toward anti-VEGF injections over focal laser photocoagulation based on recent randomized clinical trials comparing the two treatment modalities for diabetic macular

edema. In cases of proliferative diabetic retinopathy (PDR), panretinal photocoagulation (PRP) remains the gold standard to prevent blindness.<sup>1</sup> Targeted retinal photocoagulation, as made possible with PRP, enables surgeons to treat the areas of retinal non-perfusion directly, and offers the only long-term solution for ischemic diabetic retinopathy. In the end, the goal of treatment is selective retinal destruction through hundreds, if not thousands, of laser applications. This is facilitated by a multi-spot laser delivery system.

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**PRP procedure in practice**

In my clinic, we use a multi-spot laser (Supra Scan, Quantel Medical) for PRP. This system is an all-in-one machine that features preset patterns for different indications and pathologies, and can be applied for various treatments, including PRP, retinal tears, and diffuse macular edema. It offers a homogeneous distribution of spots and consistent energy delivery throughout the application.

**'The PRP procedure must be undertaken with great care and caution to avoid laser-induced complications.'**

Nancy M. Holekamp, MD

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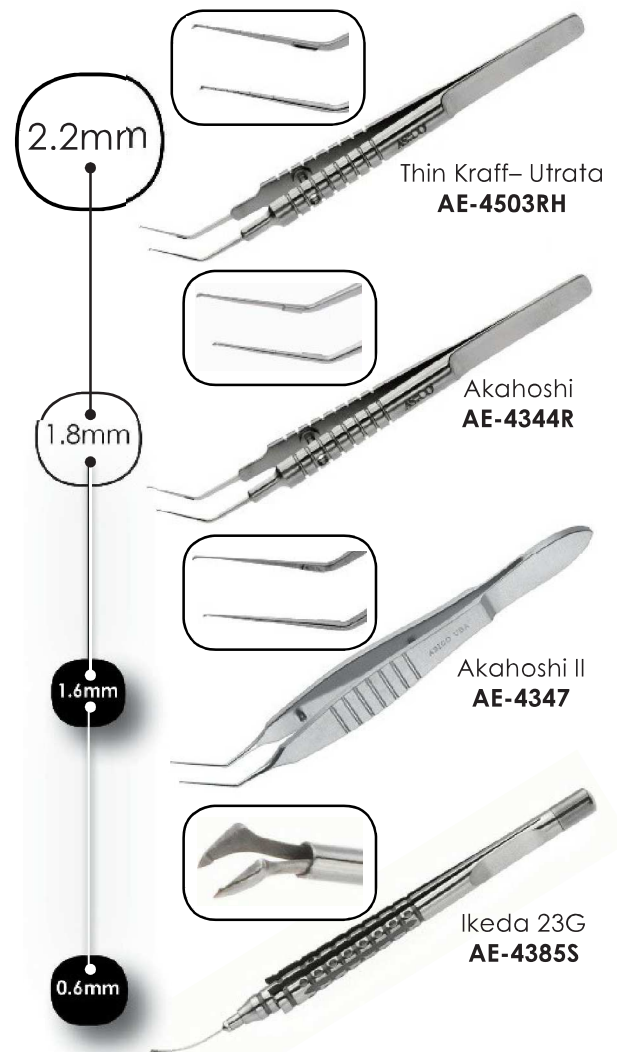
The "brilliance," if you will, of the PRP procedure is its ability to make more oxygen available to ischemic retina. PRP works its magic in three distinct ways: killing the ischemic retinal tissue so that it will not elute

In my practice, for PRP, I use a 200-µm spot size, with a very short duration of 0.01 seconds. Power is set to 800 to 1,000 mW until there is a visible whitening of the retina. I typically use a tight 3 × 3 grid pattern (9 spots). If the grid pattern covers too large an area then the uptake of the laser spots can be variable (e.g., too

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**PRP**

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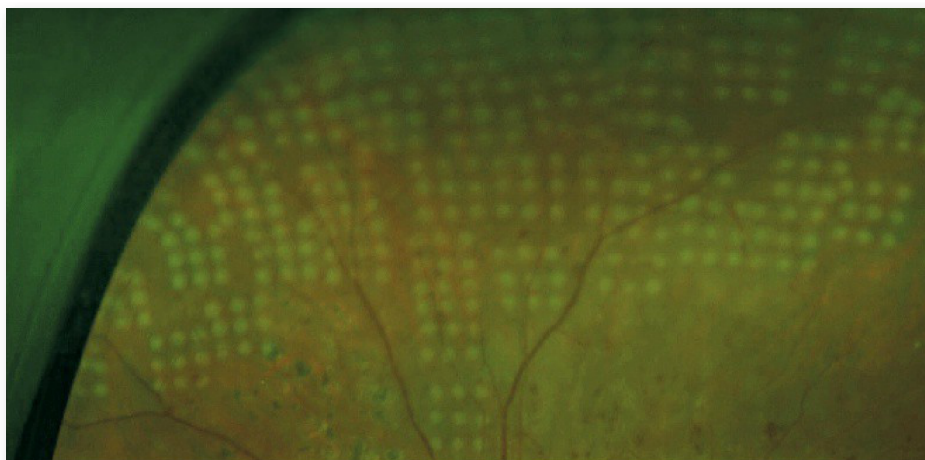
hot on one edge of the grid pattern, usually the edge closest to peripheral retina).

The 9-spot grid pattern seems to maximize efficiency (100 spots can be placed with eleven taps on the foot pedal) while eliminating uneven or unpredictable burn intensity. A single action of the pedal sends a burst of impacts in a close preset pattern, offering ease of use for the clinician. The multiple impacts are not simultaneous, however, but are formed rapidly in less than 0.6 seconds. Patterns of 4 to 25 impacts aligned in a grid are possible.

An important advantage of the multi-spot design is that I am able to offer improved patient comfort. The reduced treatment duration and lower impact energy means less pain. In turn, this allows for more laser applications in one setting, meaning fewer sessions are required to complete the procedure.

For the clinician, the multi-spot laser is engineered with ergonomics in mind, with a smooth and easy-to-use joystick and a convenient touch-screen interface. The laser is fully compatible with Haag-Streit slit lamps and the laser spot size can be changed fluently. Perhaps most important of all is the reliability of this system, which enables multiple consecutive procedures without interruption.

The PRP procedure must be undertaken with great care and caution to avoid laser-induced



**Figure 1** Superior panretinal photocoagulation in a patient with proliferative diabetic retinopathy. (Photo courtesy of Nancy M. Holekamp, MD)

complications. For example, smaller spot sizes require lower energy settings to achieve the desired intensity burn, so the power settings should be adjusted accordingly. Larger grid patterns (5 × 5; 25 spots) can be problematic because they can cause irregular burns, make it difficult to avoid vessels, or the patient could unintentionally move before all spots are applied.

Regarding laser-related side effects, such as macular edema, decreased visual acuity, and peripheral field loss, improvements to the PRP technique have mitigated these adverse effects.<sup>2,3</sup> We generally do not see these complications from PRP laser surgery anymore. Smaller spot sizes, lower energy, and custom-

izable laser settings are all important modifications that enable safe and successful treatment with minimal side effects.<sup>4</sup>

In summary, PRP remains the standard of care for PDR. With this procedure, it is possible to alter intraocular oxygen tension permanently and reduce VEGF. Thanks to advances in laser photocoagulation delivery as seen with this multi-spot laser system, reducing vision loss from diabetes and other retinal disorders now caters to both patient and clinician comfort and ease. **OT**

**References**

1. Diabetic Retinopathy Study Research Group. Photocoagulation treatment of proliferative diabetic retinopathy. Clinical application of Diabetic Retinopathy Study (DRS) findings, DRS Report Number 8. *Ophthalmology*. 1981;88: 583-600.
2. Minarcik JR, Berinsten DM. Panretinal photocoagulation: Practical guidelines and considerations. *Retinal Physician*. 2010;7:21-24.
3. Brucker AJ, Qin H, Antoszyk AN, Beck RW, Bressler NM, Browning DJ, et al. Observational study of the development of diabetic macular edema following panretinal (scatter) photocoagulation given in 1 or 4 sittings. *Arch Ophthalmol*. 2009;127:132-140.
4. Wolff SP. Diabetes mellitus and free radicals. Free radicals, transition metals and oxidative stress in the aetiology of diabetes mellitus and complications. *Br Med Bull*. 1993;49:642-652.

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