

Focal Laser Treatment Using Retinal Navigation Technology

BY RAMA D. JAGER, MD, FACS

Treating patients with diabetic macular edema is an ongoing challenge for retina specialists. One novel modality that has helped in their treatment, however, is computerized retinal navigation, available only on the Navilas laser system (OD-OS Inc., San Francisco, CA).

The Navilas laser system integrates digital retina imaging, procedure planning, image-guided laser treatment, and electronic documentation, all in one device.

I became acquainted with the system last year, after it was incorporated into our practice at University Retina. The Navilas has since become our standard of care for focal laser treatment, and we are proud to be the first practice in the world to have adopted this technology, which I believe is the future of retinal focal laser therapy.

HOW NAVILAS WORKS

Navilas replaces the traditional analog technique, a complicated method that requires the retina specialist to view an angiogram on a separate monitor and then refer back to the patient's eye through the slit lamp, mentally inverting the image, in order to identify the target.

The Navilas system, which recently received clearance from the US Food and Drug Administration, is an integrated imaging and laser device that overcomes many of the limitations of conventional slit-lamp-mounted and manually aimed retina lasers. The system allows the surgeon to first image the macula with fundus photography and fluorescein angiography and then plan the treatment by directly marking which areas to treat and more important, which areas to avoid (Figure 1). This process is performed directly on the fundus image (with fluorescein overlay), allowing the surgeon to treat the patient precisely using the Navilas' built-in software, which accounts for eye saccades.

The integrated system features imaging modes (color, infrared, and fluorescein angiography) to assess the pathology and then plan treatment, while viewing a full-screen image on the touch-screen monitor. This comput-



Figure 1. The Navilas system allows the surgeon to first image the macula with fundus photography and fluorescein angiography (A) and then plan the treatment by directly marking which areas to treat, and, more importantly, which areas to avoid (B).

erized planning mode offers surgeons the ability to overlay any of the acquired images, creating a visual depth of knowledge of the pathology, in order to plan a complete and customized laser treatment.

Once the surgeon is ready for treatment, the “plan” is registered on the live fundus and allows the aiming beam to follow any movement of the eye. It is important to note that during the planning phase, the retina specialist is able to identify not only the areas that he or she wishes to treat, but also the vital structures that should not be lasered, such as the optic nerve and foveal avascular zone. By allowing the surgeon to develop a digital plan preoperatively, the Navilas system increases the potential for more exact retinal photocoagulation.

The laser delivery is actuated by the surgeon and can be delivered spot-by-spot or consecutively, as in common pattern-style lasers. Furthermore, the laser’s integrated imaging technology enables the surgeon to switch to color imaging mode during treatment to assess and adjust the energy being delivered. When each laser spot is delivered, the degree of accuracy compared with the planned location is confirmed, giving the surgeon immediate feedback. Once the focal laser is completed, the surgeon is automatically provided with photographic documentation of the treatment, freeing him or her of the need to depend on hand-drawn figures for postoperative monitoring.

This unique technology, referred to as “retina navigation,” enables surgeons to deliver highly accurate laser spot placement and achieve greater confidence when treating near vital structures.

Image-guided technology has been introduced to many other areas of medicine, but now, with the Navilas system, retina specialists are able to incorporate this state-of-the-art technology and potentially deliver better care to their patients.

IMPROVING PATIENT EXPERIENCE

Patients undergoing any type of surgery or procedure must fully understand the treatment process. Fortunately, the Navilas laser system is an ideal educational tool, as it incorporates step-by-step demonstration, allowing you to better explain the procedure to your patient. The treatment delivery is especially comfortable for the patient because it can be performed under infrared illumination and proceeds sequentially as planned, thereby eliminating the need stop and start the laser when shifting to different treatment zones.

In addition, treatments may not always require a contact lens, which would increase patient discomfort. The Navilas also provides a customizable report editor, which incorporates the actual treatment confirmation, the laser

parameters used, and pre- and postoperative images to allow maximal transparency during and after treatment. These modalities are of great assistance when informing patients about their laser treatment.

INTEGRATION INTO A PRACTICE

Making a significant change to a clinical practice involves revisiting a number of areas, such as clinic protocols, staff training, and patient flow. Therefore, integrating a new technology into a busy retina practice can create challenges and certainly has the potential to be disruptive. Some of the compromises entailed involve the need to allocate a dedicated space for the device, train staff, educate patients, integrate new administrative processes, and, most important, become proficient with the technology very quickly.

Integrating the Navilas system into our clinic was not challenging, but instead surprisingly straightforward. Because it is an integrated device, we were able to eliminate multiple workspaces, and its compact design combine the imaging and laser all in one, resulting in a relatively small footprint. The graphical user interface is well designed, and our staff was quickly trained thanks to the highly intuitive user interface. The on-screen display easily demonstrates the imaging modes, shows how to plan a treatment, and, finally, enables others to visualize the procedure—all of which gave my staff an unprecedented level of treatment knowledge. The documentation reports that are automatically captured for each patient are helpful in completing patient files and determining follow-up schedules in a more efficient manner. Unsurprisingly, all of these benefits greatly contributed to a relatively short learning curve for me and my partners, and needless to say I have become a skilled user in only a short amount of time.

ONE SHARED GOAL

Any change to a retina specialist’s practice should aspire to provide excellent treatment results and offer the best in patient care. I fundamentally believe that the Navilas laser system provides the best care for our patients, as it represents a paradigm shift in the way we provide focal laser treatment today. ■

Rama D. Jager, MD, FACS, is President, University Retina & Macula Associates, P.C., and a Clinical Assistant Professor of Ophthalmology & Visual Science in the Department of Surgery at University of Chicago Hospitals. He states that he is a consultant to OD-OS, Alcon Laboratories, Inc., and Allergan, Inc., and that he is a shareholder of Ophthotech. Dr. Jager can be reached at +1 708 687 2222.

