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NAVILAS® 577s

OD-OS RETINA NAVIGATION COMPANY
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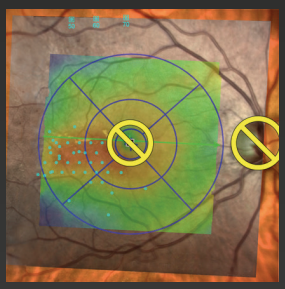
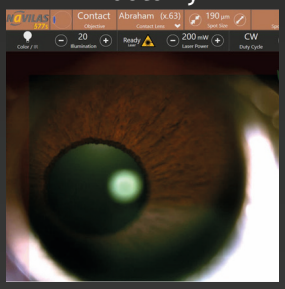
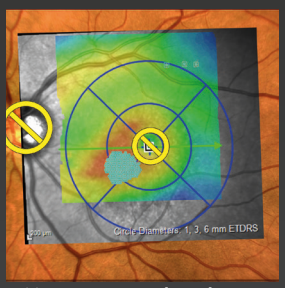
Non-contact focal laser

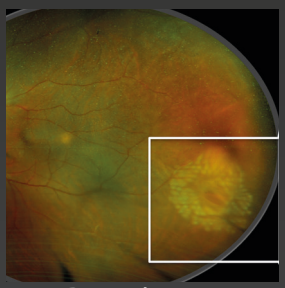


Iridotomy

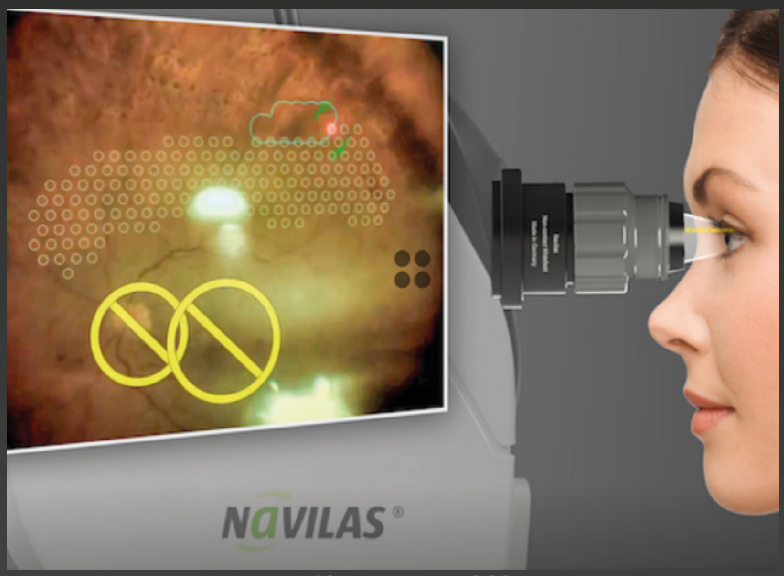




Microsecond pulsing



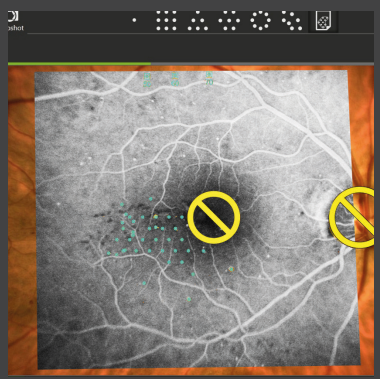
Retinal tears



Non-contact PRP

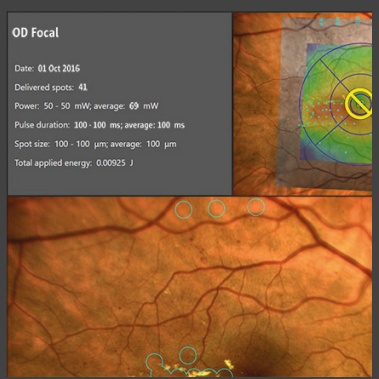
Precision | Intuitive | Comfort | Complete | Fast

Workflow



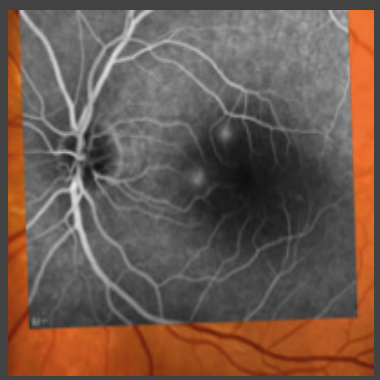
Treatment planning

Color picture & IR

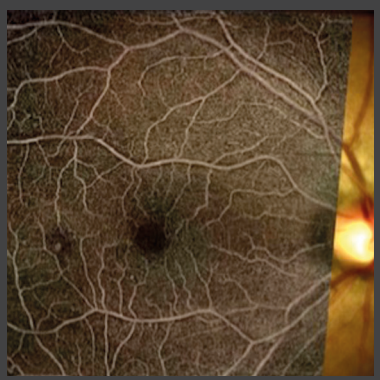


Treatment documentation

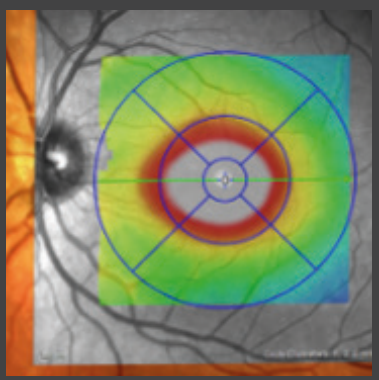
Imports



FA/ICG



OCT-A



OCT

Is there still a place for lasers ?

Dr. Francesca Amoroso

Introduction

Ophthalmologists have been using lasers for more than 40 years. Laser applications in this field involve various physical actions, and knowledge of how laser light interacts with biological tissues is useful when choosing the most suitable laser source for a given therapeutic procedure.

The interaction between laser and biological tissue is a complex phenomenon that is generally grouped into four main actions: electromechanical, photoablative, thermal and photochemical.

The first laser prototypes were developed in the early 1950s and evolved through to the 2000s, when "pattern" lasers began to emerge. (Figures 1,2,3).

NAVILAS 577s® (Figure 4) is a technological innovation that has today made guided laser photocoagulation of the retina possible, with several possible clinical applications. (Figure 5).

What is new about this laser?

The retinal periphery:

When performing retinal laser photocoagulation with NAVILAS 577s®, it is possible to pre-plan multispot laser treatment based on retinal photography and diagnostic images, e.g fluorescein angiography, which is very useful for treating sickle cell retinopathy (Figure 6).

Patient comfort is also improved by the possibility to use an infrared mode and a wide field of view (165°).

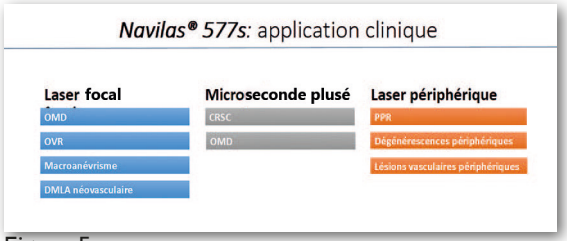


Figure 5

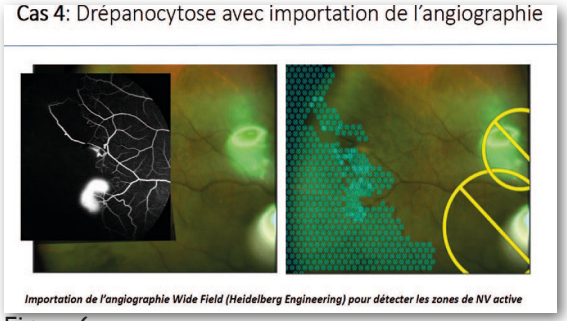


Figure 6

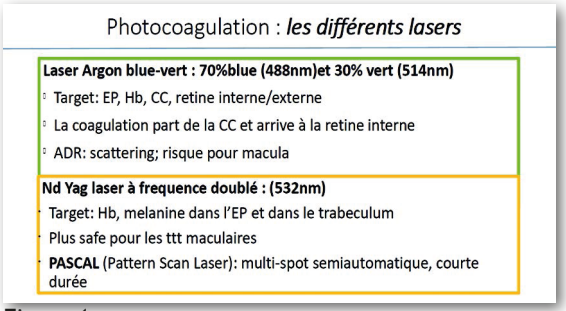


Figure 1

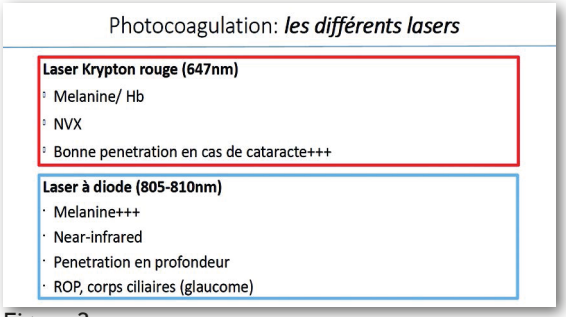


Figure 2

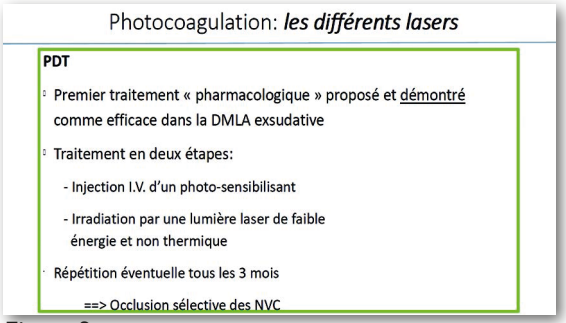


Figure 3

Figure 4

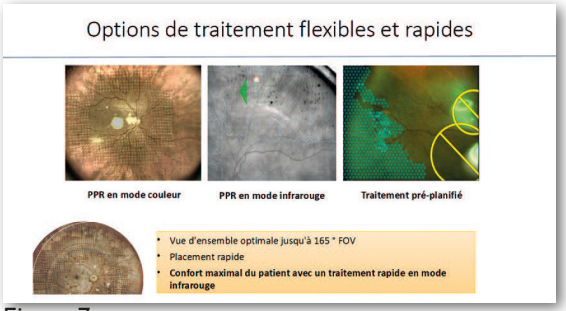


Figure 7

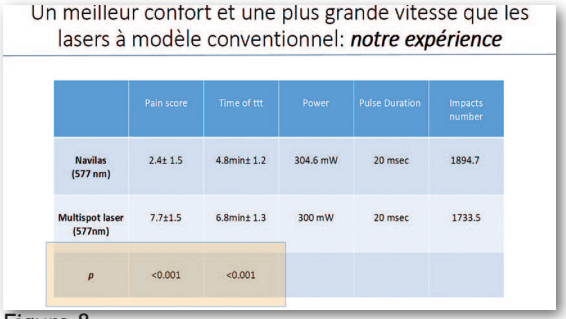


Figure 8

Navilas® offers maximum precision and safety because it is possible to pre-position and stabilise the multispot laser beam on the retina, and above all it is pain-free (Figure 7).

A current study at the Creteil intermunicipal hospital shows that retinal panphotocoagulation with NAVILAS 577s® is faster, more comfortable and more efficient than with conventional lasers (Figures 8, 9)

Focal laser treatment:

Concerning focal laser treatment: NAVILAS 577s® allows users to carry out contact-free laser treatment with high safety thanks to its eye-tracking technology.

The laser is more accurate because imaging can be superimposed, not only fluorescein angiography and indocyanine green (ICG) but also OCT and even OCT-A (Figures 10, 11).

Here is an example of focal treatment provided using the NAVILAS 577s® laser.

Focal laser treatment with contact-free NAVILAS 577s® with superimposition of the ICG image of a macroaneurysm following vein occlusion.

Branch retinal vein occlusion with supero-macular macroaneurysm in the upper vascular arches (more clearly visible in ICG) with oedematous maculopathy.

Three months after the laser focal treatment, complete regression of the macular oedema is observed (Figures 13, 14)

The microsecond pulsing laser:

A last use of NAVILAS 577s®: the microsecond pulsing laser.

This is based on a very low intensity laser source, delivering ultra-short and repetitive pulses lasting just a few millionths of a second. This safe and effective method has fewer side effects at the cellular level while benefiting from the advantages of the NAVILAS 577s® laser.

Conclusion:

NAVILAS 577s® offers a unique precision and transparent treatment documentation for a wide variety of retinal photocoagulation indications.

The combination of infrared illuminations, pre-planning and short pulses is a unique improvement in terms of minimising patient burden during laser treatment.

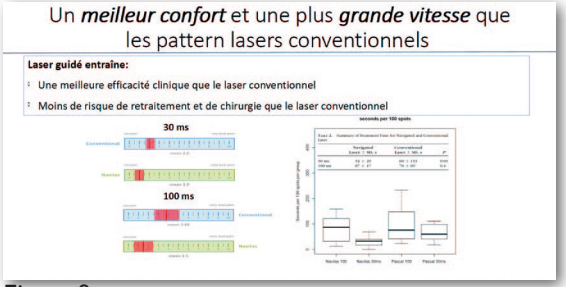


Figure 9

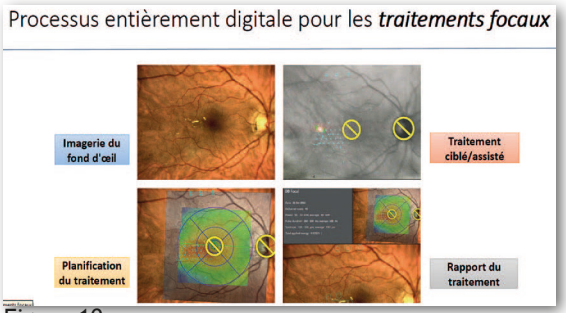


Figure 10

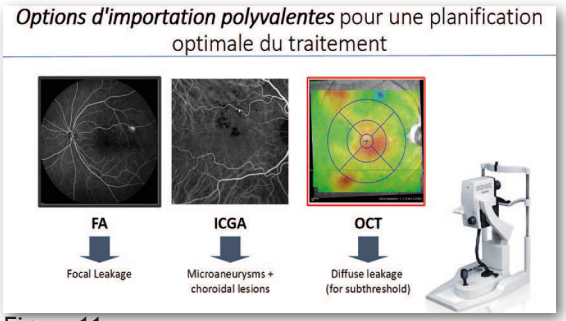


Figure 11

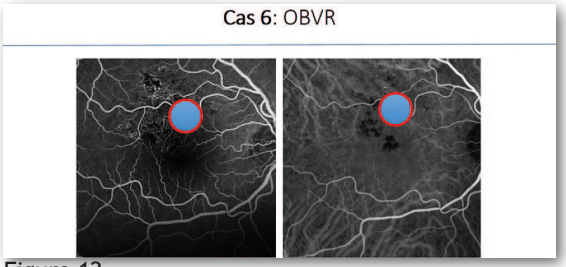


Figure 12

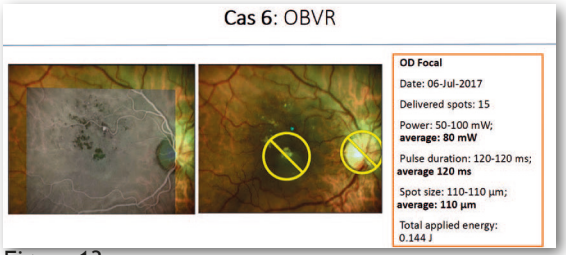


Figure 13

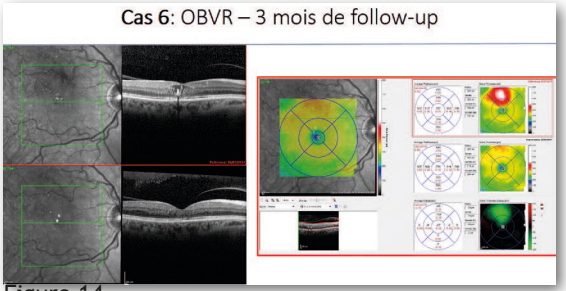


Figure 14

Clinical case
Hôpital intercommunal de Créteil

Dr. Francesca Amoroso

Introduction

Described for the first time in 1866 by Albrecht Von Graefe (1), central serous chorioretinopathy (CSCR) is defined by the occurrence of a retinal serous detachment (RSD), most often localized at the posterior pole, in a middle-aged male subject and type A personality. Fluorescein angiography (FA) confirms the diagnosis by highlighting a hyperfluorescent «leakage point» responsible for retinal serous detachment. Indocyanine green angiography (ICGA) shows hyperfluorescent plaques indicative of choroidal hyperpermeability (2).
Spontaneous regression occurs in less than 3 months in the majority of cases; however, recurrences are relatively frequent. There are also chronic (symptons for more than six months) and recurrent forms that often progress to a decrease in visual acuity (3, 4). Treatment of chronic forms of CSCR is widely debated; the current therapeutic possibilities are: focal laser on extrafoveal leakage points (5,6), half-fluence PDT (7) and microsecond pulsing laser (8). Here is a case of chronic CSCR successfully treated by navigated microsecond pulsing laser.

Observation

A 49-year-old woman consulted for a progressive loss of visual acuity in the right eye, which had been evolving for six months. No medical history was noted. Visual acuity was 20/40 P3 on the right and 20/20 P2 on the left. There was no significant abnormality in the anterior segment and the intraocular pressure was 15 mmHg in both eyes. At the back of the eye there were alterations of the pigment epithelium in both eyes, and in the right eye, retinal serous detachment of the posterior pole with multiple detachments of the nasal and temporal pigment epithelium (RPE) of the macula. Fluorescein angiography and ICGA demonstrated the classic signs of CSCR, with nasal leakage from the fovea to the right eye. In SD-OCT there was a RSO macular region and multiple detachments of the epithelium pigmentary (RPE) nasal and temporal macula; the central macular thickness was 447 microns and the thickness of the choroid was 366 microns. The foveal profile was preserved in the left eye.
Given the location of the responsible leakage point of the RSD, the therapeutic decision was to treat the patient with the NAVILAS® laser in microsecond pulsing mode (MSP 5%). The following parameters were used: non-contact objective (for the focal treatment), a total of 67 spots, 453 mW, 100 msec, 100 micron, 5% «Duty Cycle» by superimposing the ICGA to the photo taken at NAVILAS®. The treatment lasted 6 minutes, including planning time, and the patient experienced no pain. (Figure 1)
At follow-up at 3 months, the patient had an VA of 20/25 OD P22 and 20/20 P22 OS.
OCT showed the complete resolution of the DSR with a central macular thickness of 193 micron. The patient is currently being treated for 8 months and no recurrence has occurred after treatment.

Discussion and Conclusion

This case shows that targeted treatment with NAVILAS® may be effective in resolving subretinal fluid secondary to CSCR.
Although the half-fluence PDT has shown superiority to conventional pulsed microsecond laser (PLACE Trial, 9), the therapeutic results with sub-threshold retinal laser therapy are particularly encouraging. Despite the fact that slight pigmentary changes in the asymptomatic pigment epithelium have been observed, no development of scars or choroidal neovascularization has been reported after microsecond pulsing treatment. (8) The NAVILAS® laser allows a more targeted treatment using a powerful eye-tracking and planning. It has recently been reported that NAVILAS® laser treatment of 32 patients with chronic CSCR (10) allowed a complete resolution of the DSR in 17 eyes (50%) after 4 weeks and in 24 eyes (75%) after 3 months . No loss of vision due to this treatment has been observed in patients. The microsecond pulsed NAVILAS® has, in our case, a high reliability, efficiency, precision and «safety». This technique is reproducible and limits the risk of occurrence of choroidal neovascularization or central atrophy that are possible when using conventional lasers and PDT. These results obviously need to be confirmed by larger randomized studies.

Figure 1. (A) ICGA overlay to the color photograph taken at NAVILAS®;
(B) Treatment planning: the two «caution zones» (yellow circles) were placed on the fovea and the optic nerve and the upper temporal arcade impacts were used for the titration; note that the planned spots were positioned exactly on the leakage point (red arrow).
(C) SD-OCT shows retinal serous detachment (yellow star), adjacent leakage point (red arrow) and multiple detachments of pigment epithelium (asterisks).
(D) SD-OCT at 3 months of follow-up. Note the complete resolution of the serous retinal detachment.

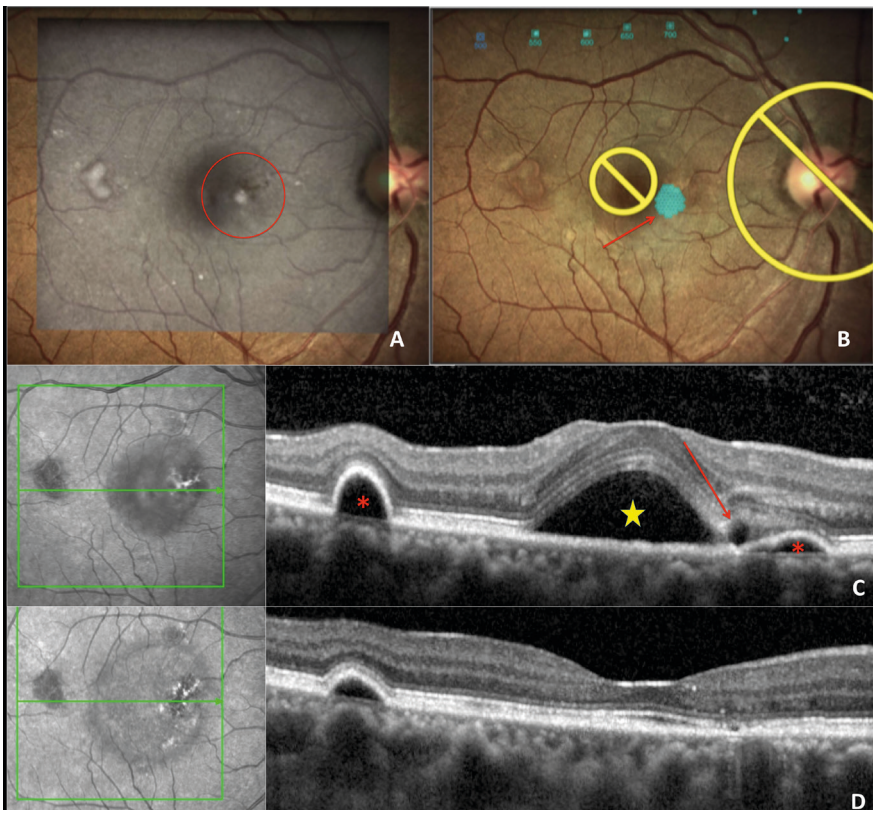


Figure 1

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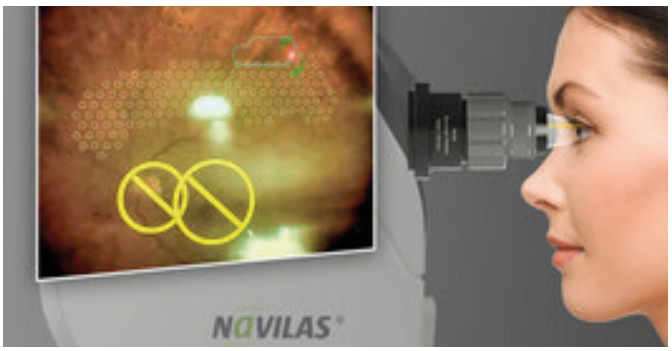
- This article is published by Dr Francesca Amoroso, CHI Créteil. This content represents the opinion of the author. -

From patient comfort to the idea of non-contact PRP treatment with Navilas® 577s

An interview with Dr. Alexandre Pedinielli

"We really believe that the non-contact wide field objective on the Navilas 577s system could be the future of PRP making it an almost completely harmless procedure for the patient."



Dr. Pedinielli, what are your experiences with the Navilas® 577s laser versus conventional retinal lasers?

When we started using Navilas® for PRP, we didn't really know which improvement could be expected compared to the conventional multispot laser that we normally use in our clinic. The patients themselves gave us the answer when they reported that the pain they felt during the treatment was lower with this new laser. Indeed, the studies on the pain using Navilas® showed a clinically significant decrease of the pain with this laser.

Why did you decide to look into a non-contact widefield objective, and how did you build the first prototype?

The objective of a good clinician is always to try to make the treatments more comfortable for the patient. With Navilas®, the treatments become almost completely painless which already was a big step forward, but the patients still had the feeling of an invasive procedure because of the contact lens for peripheral procedures which is sometimes badly tolerated.
The use of the contact lens can also be uncomfortable for the ophthalmologist and can be time consuming with stressed patients when we have to put the lens back on several times.
As we were already performing contact-free focal treatments with Navilas® , we had the idea to develop a non-contact objective using a widefield lens. We build the first demonstrator ourselves, and we were very happy that with our support OD-OS turned this into a commonly available treatment option for the Navilas® 577s laser.

What are your experiences with non-contact PRP in clinical practice?

We were really amazed by the result. We can easily use the non-contact widefield to perform complete PRP with an easy access to the extreme periphery.
The patient satisfaction is improved with that new way of performing laser and none of the treated patients want to go back to the contact procedure. Of course, because the eye movements are not limited anymore by the contact lens, we were concerned with the safety but, thanks to the Navilas® eye tracking system, all laser spots are delivered precisely where they are supposed to.
We really believe that the non-contact widefield objective on the Navilas® 577s system could be the future of PRP making it an almost completely harmless procedure for the patient.

Thank you, Dr. Pedinielli, for the interview.

NAVILAS® 577

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