

Integre Duo

The world's first solid-state photocoagulator to combine visible red and green

After a successful launch in the US and Japan, Ellex presented for the first time in Europe at the ESCRS meeting in London in September the Integre Duo, a revolutionary new laser for the doctor's office.

The Ellex Integre Duo provides both the standard of care green wavelength at 532nm and a visible red wavelength at 670nm, integrated into a slit lamp. The patented single pump dual wavelength cavity is located under the slit lamp, inside the electric table. The changeover from green to red and back is immediate and, for even greater convenience, all the treatment parameters can be set with either hand directly on the slit lamp.

Software controlled active light feed back, combined with trademarked Truespot optics, ensure that each photocoagulation spot is precisely delineated and homogeneous, whatever the energy setting.



Paulo Lanzetta is Associate Professor at the University of Udine, Italy, (head of department Pro-

fessor Francesco Bandello) where Ellex performed clinical evaluations of the Integre Duo before bringing it to the market. Invited speaker in Innsbruck at the IFA meeting, Professor Lanzetta kindly accepted to answer a few questions for Medical Network.

Medical Network: Professor Lanzetta, you have published extensively on the use of the red wavelength in photocoagulation: in a nutshell, what are the advantages of visible red in retinal treatments?

Lanzetta: The therapeutic effect of laser irradiation depends on its absorption rate at the tissue level. Retinal pigment epithelium, choroidal melanocytes and hemoglobin are the major targets during laser irradiation of the retina and the choroid. The primary effect of laser irradiation is thus related to a thermal injury induced at the melanin-containing cells, which are the major absorption sites of laser wavelength. Concurrent damage to adjacent structures occurs as a result of heat transmission through the tissue.

The 670nm solid-state laser combines the good absorption spectrum of a red laser with the advantages of portable and less



costly equipment. The absorption characteristics of the 670nm wavelength are very similar to those of the 647nm krypton laser. As regards the transmission through the ocular media, the red wavelength has an excellent curve that is scarcely influenced by opacities and is very similar to the transmission of the 810nm diode near infrared laser. Irradiation can pass through crystalline lens and vitreous opacities and hemorrhages. Also, it is well absorbed by the retinal pigment epithelium and choroidal melanocytes. Therefore, the red wavelength has excellent properties for laser photocoagulation of

the retina. Retinal whitening is obtained easily and no learning curve is needed as for the diode near infrared laser.

Medical Network: What percentage of treatments in your department benefit from the use of the red wavelength?

Lanzetta: I initially started using the 647nm krypton red laser. Unfortunately, that photocoagulator required a complex cooling system as well as dedicated electrical supply and considerable maintenance of the laser source. Subsequently, when the 810nm diode infrared laser became available, I dedicated much time to this ...>

wavelength. Finally, the 670nm laser replaced the old krypton laser and is now routinely used for the treatment of my cases.

Medical Network: Do you think that a yellow wavelength is useful if green is also available?

Lanzetta: Some years ago a number of ophthalmologists advocated the use of the yellow wavelength (570–577nm) as the ideal one for the treatment of retinal and macular diseases. The reason was due to the increased absorption at the level of hemoglobin and oxyhemoglobin. Therefore, theoretically yellow wavelength could allow the di-

thalmologists have learnt how to treat and have tried to better understand the mechanisms of tissue-laser interaction. There are evidences that less invasive modalities of laser treatment can lead to beneficial results. Recent hypotheses postulate that full thickness retinal damage may not be needed to obtain the therapeutic effectiveness. Experiments have shown that the positive effect of retinal photocoagulation is mediated by factors derived from the retinal pigment epithelium

A selective low-threshold targeting of retinal pigment epithelium cells might become the de-

steroid treatment for diabetic macular oedema. Do you find the red wavelength useful for these patients, where you are seeking to stabilise the prompt early response to steroids?

Lanzetta: Pharmacologic therapy represents a major breakthrough in the cure of a number of retinal diseases such as age-related macular degeneration, diabetic macular edema and proliferative diabetic retinopathy. However, in most cases patients need repeated treatments to control the disease. This is valid both for the use of antiangiogenic compounds and for steroids. Also, there is a rationale for the use of

injection followed by laser photocoagulation. In the course of the follow-up, the latter group had better results in terms of visual acuity improvement and edema resolution as compared to the other two groups who experienced only a temporary stabilization of the condition.

The red laser with its favorable properties of transmission through media opacities and thin layers of blood may represent the ideal wavelength for combination therapy.

Medical Network: Would you like to comment on your experience with the Integre Duo?

Lanzetta: I have used the Integre Duo in the treatment of many retinal conditions, such as proliferative diabetic retinopathy, diabetic macular edema, choroidal neovascularization, peripheral retinal tears and many others. In general, the technique and parameters applied during treatments were similar to those used with a red krypton laser. Irradiation has been possible and effective in all the cases treated. The lower density of the retinal burns was always been excellent with an even distribution of the retinal whitening within the laser spot at all spot diameters used. The viewing of the retina has been excellent with the use of both direct and wide-field contact lenses. The compact design of the photocoagulator allows its installation in any office without the need of extra space. ■



Professor Lanzetta and Christine Warren (VP Greater Europe, Ellex) in Innsbruck at the IFA meeting.

rect treatment of vascular lesions of the retina such as microaneurysms or vascular tumours. However, it is well known that other wavelengths are equally efficacious in such treatments and can effectively close vascular lesions even without their direct targeting. Moreover, a consistent absorption at the blood level can increase the risk of retinal hemorrhages due to vessel damage.

Medical Network: Today, more and more medical treatments are being offered to treat the retinal symptoms of diabetes or ARMD. Do you think that photocoagulation still has a major role to play in the ophthalmologist's armamentarium?

Lanzetta: Laser photocoagulation has been the only therapeutic possibility for many years. Oph-

sired endpoint of a therapeutically effective laser photocoagulation in those retinal and choroidal diseases in which the retinal pigment epithelium plays an important pathogenetic and therapeutic role. Therefore, the future of laser application is dependent on treatments that can avoid or minimize unnecessary retinal damage and side effects and maintain the therapeutic efficacy.

In future, laser technology might also be applied as a method to deliver specific drugs to the retinal tissue through the use of thermosensitive liposomes and microspheres encapsulating medications.

Medical Network: You discussed here in Innsbruck the advantages of combining photocoagulation with intra-vitre-

“
The 670nm solid-state laser combines the good absorption spectrum of a red laser with the advantages of portable and less costly equipment.
”

combined therapies who target different steps and pathways of the diseases.

In diabetic macular edema, steroids have been used extensively to stimulate fluid resorption. Different routes of administration, dosages and compound have been studied. However, it is commonly accepted that the effect is temporary and most patients experience recurrent edema after the effect of steroids is finished. Laser photocoagulation following steroid administration with subsequent reduced thickness of the macula can contribute to stabilize the disease with improved outcomes. We have recently studied three different modalities of treatment for patients with naive diffuse diabetic macular edema: laser photocoagulation according to the ETDRS guidelines, intravitreal triamcinolone injection, and intravitreal triamcinolone

FOR MORE INFORMATION

Ellex can be reached at:
→ 82 Gilbert Street
Adelaide, SA 5000 Australia
telephone: +61 8 8104 5200
fax: +61 8 8221 5651
email: ellex@ellex.com
website: www.ellex.com

Prof. Lanzetta can be reached at:
→ University of Udine, Department of Ophthalmology,
P. le S. Maria della Misericordia,
I-33100 Udine, Italy;
email: paolo.lanzetta@uniud.it
website: www.occhio.eyemd.org