

# Diabetic Macular Oedema and Retinal Imaging

An Expert Interview with Maurizio Battaglia Parodi

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Maurizio Battaglia Parodi is currently working at the Department of Ophthalmology, Ospedale San Raffaele in Milan, and is Associate Professor at University Vita-Salute in Milan. He has had previous appointments in the Departments of Ophthalmology at the University of Trieste and the University of Udine, Italy. Maurizio Battaglia Parodi's major clinical and research interests include age-related macular degeneration, vascular diseases and dystrophies. He has taken part in many international clinical trials, and has authored over 210 peer-reviewed, scientific articles and three books. He has received many awards for his scientific activity and is a reviewer for some of the most prestigious international journals.

## Keywords

Optical coherence tomography, imaging

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Many important eye diseases manifest themselves in the retina, one of the most prevalent of these is diabetic macular oedema. Retinal imaging and image analysis have developed rapidly over the past 10 years, and image analysis is starting to play an important role in the care of patients with retinal diseases. In advance of this year's EURETINA congress, *European Ophthalmic Review's* Editor-in-Chief, Maurizio Battaglia Parodi, of the University Vita-Salute, Milan, Italy, discusses the continuing role of laser treatment in clinically significant macular oedema, retinal imaging and image analysis methods.

## Q: In the era of intravitreal pharmacological treatments, what is the role of laser treatment for clinically significant macular oedema?

Laser is not dead. Although intravitreal drugs including anti-vascular endothelial growth factor (VEGF) and steroids, represent the typical approach for macular oedema in general, laser treatment can still be useful. In particular, laser application can provide results similar to anti-VEGF molecules in thinner diabetic macular oedema. In addition, Diabetic Retinopathy Clinical Research Network (DRCRnet) data at 5 years support the efficacy of a combined therapy laser and ranibizumab in the management of diabetic macular edema. Moreover, some cases of macular oedema associated with diabetic retinopathy and retinal vein occlusion, can benefit from peripheral laser photocoagulation in an attempt to reduce both up-regulation and release of VEGF. Lastly, I would like to underline that laser treatment in general is now shifting to new laser applications, scheduling subthreshold treatment in order to minimise the retinal damage preserving the effects.

## Q: Which presentations are you most looking forward to watching at this year's EURETINA congress?

I am particularly interested in the new treatments of retinal dystrophies, including gene therapy and stem cell therapy bearing in mind the terrible socioeconomical burden they carry on people affected.

## Q: What has been the impact of the availability of optical coherence tomography angiography on retinal imaging?

With the advent of optical coherence tomography angiography (OCTA), we can investigate the retinal vascular architecture in a more feasible way with respect to fluorescein angiography/guided indocyanine green angiography (FA/ICGA), allowing also a better visualisation of deeper

retinal vessels and the choriocapillaris. Moreover, OCTA information can be implemented by the use of currently evolving post-processing techniques; thus, providing us with more precise both qualitative and quantitative data, which can potentially have a direct impact on clinical and research purposes. We expect that in the near future OCTA can replace FA/ICGA imaging in a number of retinal diseases.

### **Q: What are the major challenges in the interpretation and analysis of optical coherence tomography angiography?**

First of all, due to the even more sophisticated developments, the most important challenge for any common ophthalmologist is that OCTA imaging interpretation requires familiarity with post-processing techniques. Secondly, although OCTA provides a large amount of 'static'

information, it is less able to provide dynamic information regarding the precise blood flow in the three most important slabs. Finally, since it is currently only possible to study the motion signal in a given range of speed values, the information provided by OCTA is limited, and does not encompass all features of the retinal vascular network.

### **Q: What are the latest developments in imaging of individual cells in the retina?**

I am more and more fascinated by the visualisation of photoreceptors and retinal pigment epithelium cells, by means of adaptive optics techniques. I believe that, in the near future, a large clinical application of these techniques can help differentiate diseases and address the therapeutic choices in a number of retinal disorders, including age-related macular degeneration, dystrophies and vascular diseases. □