RETINA: THEN AND NOW

As part of our 20th anniversary, *Retina Today* is digging into the archives to reflect on how much the profession has changed.

APRIL SPOTLIGHT: OCT

In 2006, Jay S. Duker, MD, contributed an article titled *Advances in OCT Improve Understanding of Disease States*. After a brief introduction to the technology itself, he highlighted two innovations—ultrahigh-resolution OCT and spectral OCT systems—that allowed for a better understanding of many retinal pathologies and, at least with the latter, faster acquisition speeds.

Here, Dr. Duker reflects on the advances in OCT imaging since *Retina Today* launched in 2006, and the tools poised to change the paradigm again.

RETINA TODAY (RT): HOW WERE YOU INCORPORATING OCT INTO CLINICAL PRACTICE BACK IN 2006?

Jay S. Duker, MD: Twenty years ago, OCT was really limited to specialty ophthalmologists, mostly retina and glaucoma specialists. Very few comprehensive ophthalmologists appreciated the value at the time. Outside ophthalmology, there was virtually no use of OCT. Since then, OCT has become an indispensable tool for all eye care professionals, both ophthalmologists and optometrists, to diagnose and manage ocular diseases such as diabetic macular edema, AMD, and retinal vein occlusion. You can't practice modern eye care without an OCT.

Beyond eye care, it's now become routine in neurology and gastroenterology, and you're going to see OCT technology continue to branch out into other areas of medicine.

RT: HOW HAS OCT TECHNOLOGY EVOLVED OVER THE LAST 2 DECADES?

Dr. Duker: Spectral-domain OCT is now routine, which means faster imaging speeds and better signal-to-noise ratio. You can do oversampling of the images to get better quality images, and you have widefield scans of 12 mm x 12 mm or even larger. This assists not just with disease diagnosis, but screening.

The interface between the machines and the operator is much easier—it's a single button capture now. Our examinations are more accurate from visit to visit with OCT comparisons.

In addition, multimodal imaging has improved our practice, with fluorescein angiography, ICG angiography, fundus autofluorescence, and widefield OCT all in one imaging device.

As for software, the biggest improvement has been normative databases, allowing us to tell from a scan whether a patient is within the normal limits for any given parameter. The software now allows us to monitor changes in full thickness retina, nerve fiber layer, and the ganglion cell complex.

RT: WHAT NEW IMAGING TOOLS/UPDATES ARE YOU HOPING TO SEE IN THE FUTURE?

Dr. Duker: I think it's going in two directions. First, OCT will continue to become simpler, cheaper, and more widespread; think of home OCT, which was a theory 20 years ago but now exists. Machines built to monitor disease in the patient's home don't need the same robustness that a subspecialist's OCT might need, but they're certainly effective at taking images to compare with normals or a patient's historical data. Even as the devices are simplified, they will continue to innovate to be faster with higher quality images.

Second, more dense scanning is going to give us better accuracy and provide complete widefield scanning with the real hope of someday scanning from ora serrata to ora serrata; we may one day have software that can detect where disease is present and automatically focus on that area.

It's incredible, having been there at the start of the OCT era and to see how far we have come; at one point at the New England Eye Center at Tufts Medical Center, we had the only OCT device outside the laboratory. Now, it exists in virtually every eye care clinic.

This is a technology that it will continue to evolve and help us take better care of patients. ■

FURTHER READING

Advances in OCT Improve Understanding of Disease States
March 20026
By Jay S. Duker, MD

READ NOW