

FOCUS ON. . .**A New Level of Eye Imaging**By **KAREN APPOLD, CONTRIBUTING WRITER** June 1, 2015

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A New Level of Eye Imaging*Optical coherence tomography machine has the fastest scan speed to date.***BY KAREN APPOLD, CONTRIBUTING WRITER**

Oakland, NJ-based Topcon Medical Systems brings a new generation of optical coherence tomography machines to the market with its swept-source DRI OCT Triton, featuring the world's fastest scanning speed of 100,000 A-scans per second and 1,050-nm wavelengths. The machine is not yet approved for sale in the United States.

"The device allows physicians to see much deeper than traditional spectral-domain OCTs," says Thai Do, product manager at Topcon. "We can now visualize detail in the vitreous all the way down to the choroid in a single scan." A full 3D cube can quickly be obtained, which minimizes patient scan time while improving the physician's ability to diagnose.

José Antonio Mendoza, MD, medical director of Centro de Diagnostico Ocular, and imaging diagnosis specialist, Oftalmosalud, Lima, Peru, has actively participated in OCT evolution — initially working with first-generation time-domain OCT and then advancing to spectral domain. "I am amazed by the new possibilities that the DRI OCT Triton offers," he says.

"Having high-resolution imaging enables good 3D reconstruction of anterior and posterior segments," Dr. Mendoza says. "Fast scans reduce artifacts due to eye movement, and we can now scan the eye through opaque media, which provides a lot of reliable data. This kind of imaging wouldn't be possible with older, slower machines."



IMPROVING PATIENT OUTCOMES

The DRI OCT Triton is a noncontact, high-resolution tomographic and biomicroscopic imaging device. It is indicated for in-vivo viewing, axial cross-sectional, 3D imaging, and the measurement of posterior ocular structures, including the retina, retinal nerve fiber layer, ganglion cell plus inner plexiform layer, ganglion cell complex, macula, optic nerve head, and choroid.

The DRI OCT Triton benefits patients with retinal conditions, including those with cataracts, corneal disease, and other anterior-segment disorders, as well as glaucoma. It is intended for use as a diagnostic device to aid in the detection and management of ocular diseases including, but not limited to, macular holes, cystoid macular edema, diabetic retinopathy, and age-related macular degeneration.

Widfield scanning (12 mm × 9 mm) is advantageous for both macular and glaucoma specialists, allowing fully automated mapping and illustration of both the macula and optic disc in a single scan and potentially halving the number of scans a patient requires.

“Good-quality images lead to good layer segmentation, which leads to good measurement data,” Dr. Mendoza says. “This significantly improves pathology detection, in both qualitative and quantitative ways. Tracking capabilities improve follow-up and trend analysis.”

INNOVATIONS ABOUND

The capability to scan through opaque media is game-changing. “This allows us to scan a larger number of patients with great repeatability,” Dr. Mendoza says. “We can obtain real visualization, which was otherwise impossible to get with regular spectral-domain OCT.”

Mr. Do explains that the 1,050-nm light source allows physicians to image through dense cataracts and hemorrhages, as well as visualize the choroid in greater detail. Because of its near-infrared frequency, the light source is invisible to the human eye — which helps to reduce eye movements and obtain better quality images.

EASE OF USE

According to Dr. Mendoza, the DRI OCT Triton is very easy to use. “Obtaining good images is no longer operator dependent,” he says. “A physician can rely on a well-trained operator to capture the images as well as the doctor.” When conducting follow-up, eye-tracking technology allows the physician to obtain a scan at the same exact

position as before.

The instrument utilizes a joystick control system, similar to the rest of Topcon's instrument line, Mr. Do says, and the directional control of the joystick is intuitive. The user interface is logically laid out with appropriate labels, and it uses a touch screen for simple navigation.

The DRI OCT Triton has the ability to import images from other devices and allows the doctor to register them so he or she can see correlations between imported fundus photos and OCT scans. The OCT scans and reports can also be saved in Topcon's image management system.

LOOKING AHEAD

Dr. Mendoza believes swept-source technology is the biggest leap into the future for eye imaging and expects it to soon be the gold standard for retina and anterior-segment scanning. "New capabilities will improve this technology even further, with the ability to obtain high-resolution OCT angiography, and it will guide our understanding of retinal, choroid, and vitreous visualization, which will lead to new management of pathologies that otherwise would be impossible," he says. **RP**

Retinal Physician, Volume: 12, Issue: June 2015, page(s): 59, 60

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