

## MODULE 7.4

### Other Types of OCT

Since its introduction in 1991, the technology of OCT has undergone continual evolution. Spectral-domain OCT (SD-OCT) brought faster scanning and higher resolution, allowing the creation of 3D imaging of retinal structures (see Module 7.3). More recently, advances in SD-OCT technology have pushed the imaging capability of OCT further posterior in the eye, allowing imaging of the choroid and the choroidoscleral interface.<sup>1,2</sup> The development of enhanced-depth SD-OCT (ED-OCT), swept-source ultrahigh-speed OCT (SS-OCT), and other high-definition SD-OCT technologies may have important implications in study of diabetic eye disease.

The pathogenesis of diabetic retinopathy (DR) has primarily been attributed to damage in the retinal vasculature, but evidence from indocyanine green angiography and laser Doppler flowmetry suggests that angiopathy in the choroid may coexist with the retinal vascular pathology.<sup>3</sup> Now technologies such as ED-OCT and SS-OCT permit efficient

visualization of the choroid. The advantage of using these new forms of OCT is their ability to visualize the choroid in real time in precise anatomical detail.<sup>3</sup>

Recent investigations using high-definition SD-OCT have demonstrated that the morphology of the choroidal layer is altered in eyes with DR.<sup>3,4</sup> Notable was the presence of an S-shape to the choroidoscleral interface in most eyes with DR and displacement of the thickest point of the choroid from under the central fovea. In eyes with diabetic macular edema (DME) and proliferative diabetic retinopathy (PDR), there was a reduction in thickness of the medium choroidal vessel layer and the choriocapillaris layer, compared with those of control eyes.<sup>3,4</sup> Further study may provide more insights into the relationships between choroidal angiopathy and diabetic eye disease.

### References

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3. Adhi M, Brewer E, Waheed NK, Duker JS. Analysis of morphological features and vascular layers of choroid in diabetic retinopathy using spectral-domain optical coherence tomography. *JAMA Ophthalmol*. 2013;131:1267-1274.
4. Regatieri CV, Branchini L, Carmody J, Fujimoto JG, Duker JS. Choroidal thickness in patients with diabetic retinopathy analyzed by spectral-domain optical coherence tomography. *Retina*. 2012;32:563-568.