Optical coherence tomography angiography (OCTA) is a promising imaging technique that allows for noninvasive and quick evaluation of macular perfusion without the need for extrinsic dye injection. In this study, we analyzed the macular capillary densities measured in eyes with different stages of diabetic retinopathy using OCTA, and demonstrated its potential clinical application for early detection of diabetic retinopathy.

Our finding of higher capillary density measured in the DMnoDR supports the hypothesis of capillary dilation precedes clinical diabetic retinopathy (Glover et al, J Ocul Pharmacol Ther, 2000). Our unique quantitative analysis approach of macular capillary density may prove useful for earlier diabetic retinopathy detection and monitoring disease progression.

Mean (±SD) of capillary densities measured at the 200µm annulus for the control, DMnoDR, NPDR and PDR were 35.63 ± 3.83, 37.44 ± 3.26, 32.87 ± 3.20, and 30.95 ± 3.00%, respectively. There was stepwise reduction of capillary density as diabetic retinopathy advanced except for the DMnoDR group. Capillary density in the DMnoDR group was found to be significantly higher compared to the other three groups (P<.05).

Our finding of higher capillary density measured in the DMnoDR supports the hypothesis of capillary dilation precedes clinical diabetic retinopathy (Glover et al, J Ocul Pharmacol Ther, 2000). Our unique quantitative analysis approach of macular capillary density may prove useful for earlier diabetic retinopathy detection and monitoring disease progression.