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ARVO Annual Meeting Abstract | September 2016

# Optic disc centered imaging versus quadrant imaging in retinal oximetry

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## Abstract

**Purpose :** To compare intra eye variation in retinal vessel oxygen saturation in optic disc centered versus quadrant imaging

**Methods :** Forty two consecutive healthy subjects were included in the study. Patients with corrected distance vision acuity less than 20/30, cataract or other significant media opacities, history of ocular or systemic disease or history of smoking that can confound measurements were excluded. After dilatation with 1% tropicamide and 10% phenylephrine all patients had 50 degree optic disc centered images and images of 4 quadrants (superotemporal - ST, superonasal - SN, inferonasal - IN and inferotemporal - IT) taken on the Oxymap T1 retinal oximeter (Oxymap hf. Reykjavik, Iceland). The thickest arteriole and venule (>100 $\mu$ m) were chosen in each quadrant in the optic disc centered images. For quadrant images averaged values of 3 segments of thickest arterioles and venules (>100 $\mu$ m) were chosen in each quadrant. The intra-eye variation between arteriolar and venous saturation (%) was compared between optic disc centered and

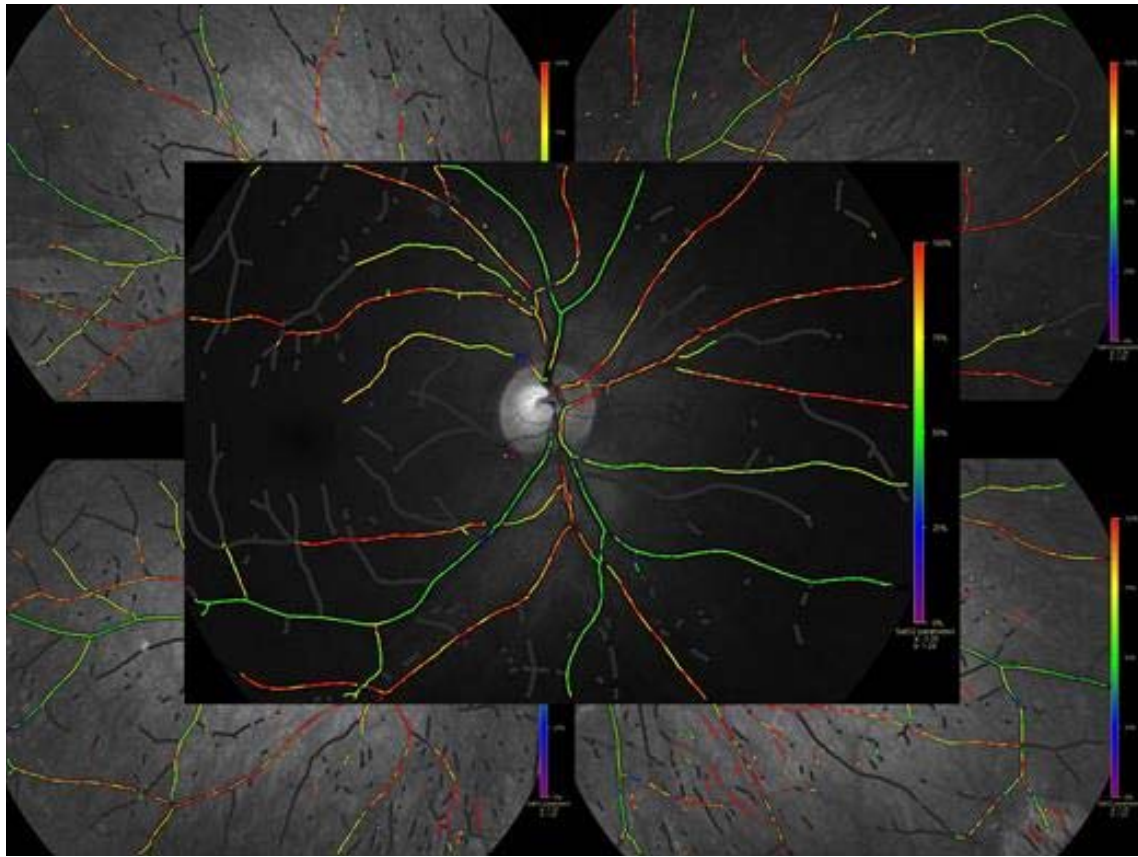
quadrant images. As a secondary objective we also chose smaller vessels (70 – 100  $\mu\text{m}$ ) in the quadrant images to map the oximetry changes through the retinal circulation.

**Results :** Optic disc centered images gave average arteriolar saturation (%) of 89, 94, 94 and 88 and venous saturation of 58, 61, 60 and 52 in the ST, SN, IN and IT respectively. For quadrant images the average arteriolar saturation was 94, 94, 94 and 91 and the venous saturation was 62, 60, 61 and 59 in the ST, SN, IN and IT respectively. The average intra eye variation was  $11.8 \pm 5.7$  for arterioles;  $11.7 \pm 4.5$  for venules in optic disc centered images and  $7.1 \pm 3.6$  for arterioles;  $7.5 \pm 3.2$  for venules for quadrant images. The intra eye variation was significantly less ( $p < 0.001$  for arterioles and venules) for quadrant images when compared to optic disc centered images. In the quadrant images, the average saturation in the large arterioles was 93, small arterioles 91, small venules 68 and large venules was 61.

**Conclusions :** Quadrant imaging had significantly reduced intra eye variation in comparison to optic disc centered images. This larger variation observed in optic disc centered images could be artifactual. We also see a physiologically reducing saturation - large arterioles > small arterioles > small venules > large venules.

This is an abstract that was submitted for the 2016 ARVO Annual Meeting, held in Seattle, Wash., May 1-5, 2016.

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Figure showing optic disc centered versus quadrant images

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