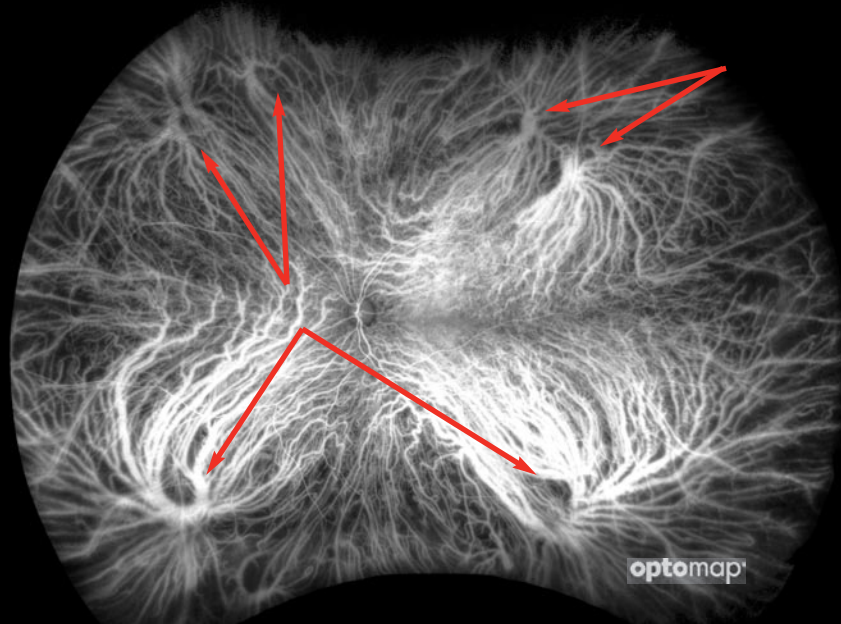


# optomap®

## HELPS RESEARCHERS UNDERSTAND THE CHOROID AND ITS IMPACT ON VISION LOSS



### Results from a recent publication found that the mean number of vortex vein ampullae is much larger than previously reported.

- Researchers found that the mean number of vortex veins was 8 with as many as 13 observed in a study of normal subjects.<sup>1</sup>
- The frequency of ampullae was higher in the superior and inferior quadrants than in the nasal and temporal quadrants. Ampullae were never observed in the 3- and 9-o'clock meridians.<sup>1</sup>
- The mean distance (mm) of a vortex vein ampulla from the optic nerve was observed as 14.<sup>1</sup>
- The normal peripheral extent of choroidal circulation was estimated to be 893.22mm<sup>2</sup>.<sup>2</sup>
- Understanding the function of the choroid has become more compelling with the advent of anti-VEGF treatments. Recognizing that the mean number of vortex vein ampullae is much higher than previously reported is important because they function as the venous drainage of the choroid into the superior and inferior ophthalmic veins. More vortex veins may impact the drainage of the eye and have an impact on the success of treatment. Vortex veins are being studied for their impact on various disease states.
- Vortex vein ampullae are important boundary landmarks for understanding the field of view being visualized by ultra-widefield imaging technologies and that they may be missed by widefield images.<sup>3</sup>

*“We observed a higher frequency of vortex vein ampullae than previously described, with a relatively uniform distribution in the various quadrants.”<sup>1</sup>*

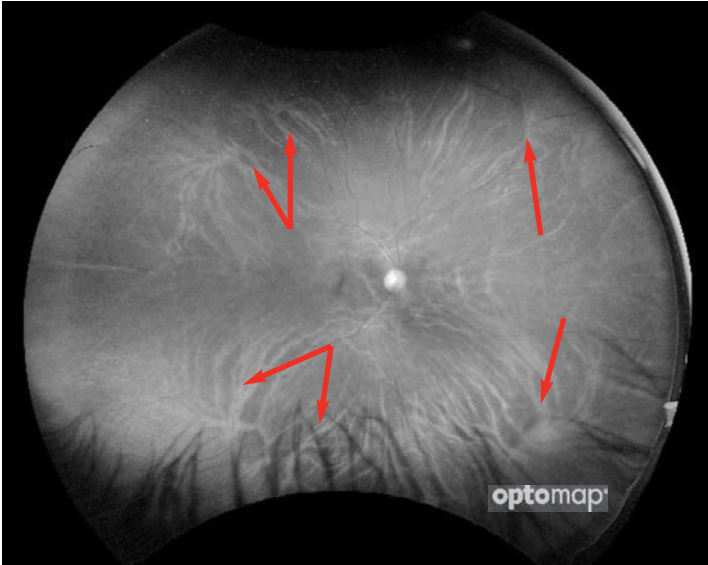
— *Ophthalmology Retina*, 2019

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# CLINICAL SUMMARY

## optomap® Helps Researchers Understand The Choroid And Its Impact On Vision Loss



Vortex vein ampullae are also visible in **optomap** red channel images.

Advances in imaging techniques, in particular UWF ICGA, have allowed improved in vivo visualization of the vortex veins and a better evaluation of the choroidal drainage system in its complexity. These choroidal outflow pathways may affect the pathophysiology and/or the expression of various posterior segment diseases with great impact on the general population. The advent of therapeutics delivered to the suprachoroidal space further highlights the importance of understanding choroidal drainage pathways.<sup>4</sup>

- The mean number of ampullae observed by UWF ICGA was 8 (range 5-13) which is larger than previously reported.<sup>1</sup>
- The mean distance mm of a vortex vein ampulla from the optic nerve was 14.2 mm.<sup>1</sup>
- The frequency of ampullae was higher in the superior and inferior quadrants than in the nasal and temporal quadrants. Ampullae were never observed in the 3- and 9-o'clock meridians.<sup>1</sup>
- The study was performed using the Optos California device as it had been reported as the only technology that could consistently image out past the vortex veins.<sup>2</sup>
- Researchers are working to understand the importance of the periphery in relation to ocular surgery, retinal disease, and whether having more ampullae may function as more potential drainage sites for drugs post-injection.<sup>1,4</sup>
- The mean area of the peripheral extent was estimated to be 893.22mm<sup>2</sup>.<sup>2</sup> The mean distance of this boundary from optic nerve center was 18.22 mm.<sup>2</sup>
- Recently, the International Widefield Imaging Study Group has used the vortex veins as a boundary marker for delineating widefield and ultra-widefield imaging, describing “ultra-widefield as images showing retinal anatomy anterior to the vortex vein ampullae in all 4 quadrants.”<sup>3</sup>

#### References:

1. Distribution and Location of Vortex Vein Ampullae in Healthy Human Eyes as Assessed by Ultra-Widefield Indocyanine Green Angiography. *Ophthalmology Retina*. 2019
2. Peripheral extent of the choroidal circulation by ultra-widefield indocyanine green angiography in healthy eyes. *BJO*. 2020.
3. Classification & Guidelines for Widefield Imaging Recommendations from the International Widefield Imaging Study Group. *Ophthalmology Retina*. 2019.
4. Vortex Vein Imaging: What Can It Tell Us? *Dovepress*. 2021.



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