Supplemental Table 1. Proportion of Captured OCTA Images with and without Eye Tracking in Different Image Categories

Image Category	Implementation of Eye Tracking Technology	
	Yes N (%)	No N (%)
Non-HD ONH	486 (35.2)	893 (64.8)
3*3 mm² non-HD macula	565 (38.8)	891 (61.2)
6*6 mm² non-HD macula	442 (49.3)	454 (50.7)
HD ONH	413 (54.3)	348 (45.7)
HD macula	444 (57.7)	326 (42.3)
Total	2350 (44.7)	2912 (55.3)

N: number, HD: high density, ONH: optic nerve head.

The proportion of OCTA Images with and without eye tracking was different among different image categories ($P < 0.001$)

Supplemental Table 2. Multivariable Generalized Linear Mixed Model Analysis of the Characteristics Associated with Increased Likelihood of Obtaining a Poor Quality OCTA Image per Image Category

Image type Variables	Non-HD ONH, (N = 1379) Odds ratio (95% CI), P	3*3 mm² non-HD macula, (N = 1457) Odds ratio (95 % CI), P	6*6 mm² non-HD macula, (N = 896) Odds ratio (95 % CI), P	HD ONH, (N = 761) Odds ratio (95 % CI), P	HD macula, (N = 770) Odds ratio (95 % CI), P
Age (per 10-year increase)	1.62 (1.31, 2.01), **< 0.001**	1.91 (1.55, 2.36), **< 0.001**	1.74 (1.35, 2.23), **< 0.001**	1.94 (1.42, 2.66), **< 0.001**	2.22 (1.58, 3.13), **< 0.001**
Gender (Female/Male)	0.57 (0.35, 0.94), **0.027**	0.68 (0.43, 1.08), 0.101	0.74 (0.44, 1.27), 0.276	0.84 (0.44, 1.60), 0.591	0.49 (0.24, 0.99), **0.048**
IOP (per 1 mmHg increase)	0.97 (0.93, 1.01), 0.172	0.99 (0.95, 1.03), 0.695	0.98 (0.93, 1.02), 0.317	1.01 (0.95, 1.08), 0.733	0.97 (0.91, 1.04), 0.433
CCT (per 10 μm increase)	1.00 (0.95, 1.06), 0.987	0.96 (0.91, 1.01), 0.132	0.96 (0.91, 1.03), 0.243	0.99 (0.91, 1.06), 0.702	0.94 (0.87, 1.03), 0.170
Cylindrical Refractive Error (per 1 D increase)	1.00 (0.95, 1.06), 0.994	1.18 (0.93, 1.48), 0.166	1.04 (0.80, 1.36), 0.767	0.87 (0.63, 1.22), 0.426	0.88 (0.61, 1.25), 0.465
VF MD (per 1-dB decrease)	1.09 (1.05, 1.12), **< 0.001**	1.09 (1.05, 1.13), **< 0.001**	1.08 (1.04, 1.13), **< 0.001**	1.12 (1.06, 1.18), **< 0.001**	1.09 (1.04, 1.16), **0.001**
Eye Tracking (Tracking/No Tracking)	0.56 (0.38, 0.82), **0.003**	0.42 (0.30, 0.58), **< 0.001**	0.48 (0.31, 0.74), **0.001**	0.30 (0.18, 0.51), **< 0.001**	0.40 (0.24, 0.68), **0.001**

HD: high density, ONH: optic nerve head, N: number, IOP: intraocular pressure, CCT: central corneal thickness, VF: visual field, MD: mean deviation, PSD: pattern standard deviation, D: diopter.

P-values with statistical significance (P < 0.05) are shown in bold.

Supplemental Table 3. Prevalence of Different Subtypes of Severe Artifacts Across Diagnostic Categories of OCTA Images with Acceptable Quality Score (>= 4)

Artifact Type		Diagnosis (N = 4541)			P-value*
		Healthy (N = 624)	Glaucoma Suspect (N = 1212)	Glaucoma (N = 2705)	
Shadow		12 (1.9 %)	40 (3.3 %)	193 (7.1 %)	**< 0.001**
Eye Movement		34 (5.5 %)	107 (8.8 %)	341 (12.6 %)	**< 0.001**
Defocus		32 (5.1 %)	79 (6.5 %)	323 (11.9 %)	**< 0.001**
Segmentation Error	Manually Correctable	20 (3.2 %)	97 (8.0 %)	230 (8.5 %)	**< 0.001**
	Uncorrectable	12 (1.9 %)	36 (3.0 %)	195 (7.2 %)	
	Total	32 (5.1 %)	133 (11.0 %)	425 (15.7 %)	
Decentration		13 (2.1 %)	40 (3.3 %)	131 (4.8 %)	**0.002**
Blink		4 (0.6 %)	11 (0.9)	40 (1.5 %)	0.120
Z offset		8 (1.3 %)	8 (0.7 %)	49 (1.8 %)	**0.019**

N: number.

* P-values with statistical significance (< 0.05) are shown in bold.

Supplemental Table 4. Association of Image Characteristics with the Likelihood of Presence of Different OCTA Artifact Subtypes in Images with Acceptable Quality Score

Artifact Type	Image Characteristics	OR (95% CI)	*P*-value[*]
Shadow	Location (ONH/Macula)	1.55 (1.15, 2.08)	**0.004**
	Density (HD/non-HD)	0.88 (0.63, 1.24)	0.473
Eye Movement	Location (ONH/Macula)	0.18 (0.14, 0.24)	**< 0.001**
	Density (HD/non-HD)	1.29 (1.00, 1.68)	**0.050**
Defocus	Location (ONH/Macula)	1.28 (1.02, 1.61)	**0.032**
	Density (HD/non-HD)	0.87 (0.67, 1.13)	0.296
Segmentation Error	Location (ONH/Macula)	1.40 (1.15, 1.70)	**0.001**
	Density (HD/non-HD)	1.02 (0.82, 1.27)	0.866
Decentration	Location (ONH/Macula)	1.02 (0.74, 1.42)	0.897
	Density (HD/non-HD)	0.43 (0.28, 0.65)	**< 0.001**
Blink	Location (ONH/Macula)	1.49 (0.86, 2.57)	0.156
	Density (HD/non-HD)	1.53 (0.86, 2.72)	0.148
Z offset	Location (ONH/Macula)	3.80 (2.09, 6.93)	**< 0.001**
	Density (HD/non-HD)	0.96 (0.53, 1.76)	0.897

N: number, ONH: optic nerve head, HD: high density.
Generalized linear mixed model was used to evaluate the association of image characteristics with the likelihood of presence of each OCTA artifact subtype. Both variables were included in the model simultaneously.
* *P*-values with statistical significance (< 0.05) are shown in bold.

Supplemental Table 5. Prevalence of Poor-Quality OCTA Images at Three Separate Levels including All Images, Last Image of Each Category per Visit and Last Image of each Category

Image Category	All Images (N = 5263)	Last Image of Each Category per Visit (N = 4655)	Last Image of Each Category (N = 2352)	*P*-value
Non-HD ONH	396 (28.7)	331 (28.0)	159 (28.4)	0.690
3*3 mm² non-HD macula	647 (44.4)	570 (43.9)	244 (43.0)	0.226
6*6 mm² non-HD macula	288 (32.1)	267 (31.5)	143 (30.5)	0.896
HD ONH	207 (27.2)	197 (29.9)	117 (31.2)	0.128
HD macula	247 (32.1)	232 (34.9)	124 (32.5)	0.607
Total	1785 (33.9)	1597 (34.3)	787 (33.5)	0.431

N: number, HD: high density, ONH: optic nerve head.

Supplemental Table 6. Univariable and multivariable generalized linear mixed model analysis of the characteristics associated with the increased likelihood of having a poor quality OCTA image using last image of each category per visit (N = 4655)

Variables	Univariable Model		Multivariable Model	
	Odds ratio (95% CI)	*P*-value*	Odds ratio (95 % CI)	*P*-value*
Age (per 10-year increase)	1.96 (1.70, 2.25)	**< 0.001**	1.78 (1.53, 2.08)	**< 0.001**
Gender (Female/Male)	0.67 (0.45, 1.00)	**0.048**	0.68 (0.47, 0.97)	**0.036**
Race (African American/non-African American)	1.01 (0.63, 1.61)	0.970		
IOP (per 1 mmHg increase)	0.98 (0.95, 1.00)	0.093	1.00 (0.97, 1.03)	0.964
CCT (per 10 μm increase)	0.95 (0.91, 0.99)	**0.010**	0.96 (0.93, 1.00)	0.066
Axial length (per 1 mm increase)	0.88 (0.76, 1.02)	0.086	0.94 (0.81, 1.08)	0.357
Spherical Refractive Error (per 1 D increase)	1.03 (0.94, 1.13)	0.503		
Cylindrical Refractive Error (per 1 D increase)	1.32 (1.11, 1.58)	**0.002**	1.06 (0.90, 1.26)	0.483
Spherical Equivalent of Refraction (per 1 D increase)	1.08 (0.98, 1.18)	0.130		
VF MD (per 1-dB decrease)	1.09 (1.07, 1.12)	**< 0.001**	1.08 (1.05, 1.10)	**< 0.001**
VF PSD (per 1-dB increase)	1.11 (1.07, 1.15)	**< 0.001**		
Diagnosis		**< 0.001**		
Glaucoma suspect/Healthy	1.88 (1.07, 3.31)	**0.028**		
Glaucoma/Healthy	3.96 (2.36, 6.63)	**< 0.001**		
Eye Tracking (Tracking/No Tracking)	0.60 (0.50, 0.72)	**< 0.001**	0.58 (0.48, 0.70)	**< 0.001**
Image type		**< 0.001**		**< 0.001**
3x3 mm² non-HD macula/4.5x4.5 mm² non-HD ONH	2.87 (2.32, 3.54)	**< 0.001**	2.86 (2.29, 3.58)	**< 0.001**
6x6 mm² non-HD macula /4.5x4.5 mm² non-HD ONH	1.36 (1.07, 1.73)	**0.012**	1.32 (1.02, 1.70)	**0.032**
4.5x4.5 mm² HD ONH /4.5x4.5 mm² non-HD ONH	1.20 (0.93, 1.56)	0.165	1.21 (0.92, 1.60)	0.168
6x6 mm² HD macula /4.5x4.5 mm² non-HD ONH	1.85 (1.43, 2.39)	**< 0.001**	1.88 (1.43, 2.46)	**< 0.001**

IOP: intraocular pressure, CCT: central corneal thickness, VF: visual field, MD: mean deviation, PSD: pattern standard deviation, D: diopter, HD: high density, ONH: optic nerve head.

This sub analysis includes 3061 (65.8%) good quality and 1594 (34.2%) poor quality images.

* *P*-values with statistical significance (*P* < 0.05) are shown in bold.

Supplemental Table 7. Univariable and multivariable generalized linear mixed model analysis of the characteristics associated with the increased likelihood of having a Poor-Quality OCTA image using last image of each category (N = 2352)

Variables	Univariable Model		Multivariable Model	
	Odds ratio (95% CI)	*P*-value*	Odds ratio (95 % CI)	*P*-value*
Age (per 10-year increase)	2.28 (1.87, 2.79)	**< 0.001**	1.92 (1.54, 2.39)	**< 0.001**
Gender (Female/Male)	0.54 (0.31, 0.92)	**0.024**	0.49 (0.29, 0.83)	**0.008**
Race (African American/non-African American)	0.93 (0.49, 1.75)	0.818		
IOP (per 1 mmHg increase)	0.94 (0.90, 0.98)	**0.007**	0.98 (0.93, 1.02)	0.268
CCT (per 10 µm increase)	0.94 (0.89, 1.00)	**0.049**	0.97 (0.91, 1.02)	0.248
Axial length (per 1 mm increase)	0.79 (0.64, 0.98)	**0.031**	0.84 (0.68, 1.04)	0.106
Spherical Refractive Error (per 1 D increase)	0.96 (0.84, 1.10)	0.531		
Cylindrical Refractive Error (per 1 D increase)	1.51 (1.16, 1.97)	**0.002**	1.13 (0.88, 1.46)	0.340
Spherical Equivalent of Refraction (per 1 D increase)	1.01 (0.88, 1.16)	0.846		
VF MD (per 1-dB decrease)	1.14 (1.10, 1.19)	**< 0.001**	1.10 (1.06, 1.15)	**< 0.001**
VF PSD (per 1-dB increase)	1.16 (1.09, 1.23)	**< 0.001**		
Diagnosis		**< 0.001**		
Glaucoma suspect/Healthy	2.06 (0.95, 4.43)	0.066		
Glaucoma/Healthy	5.84 (2.93, 11.65)	**< 0.001**		
Eye Tracking (Tracking/No Tracking)	0.41 (0.28, 0.59)	**< 0.001**	0.40 (0.27, 0.60)	**< 0.001**
Image type		**< 0.001**		**< 0.001**
3x3 mm² non-HD macula /4.5x4.5 mm² non-HD ONH	3.49 (2.44, 4.98)	**< 0.001**	3.63 (2.48, 5.30)	**< 0.001**
6x6 mm² non-HD macula/4.5x4.5 mm² non-HD ONH	1.29 (0.89, 1.88)	0.180	1.27 (0.85, 1.88)	0.244
4.5x4.5 mm² HD ONH /non-HD ONH	1.43 (0.95, 2.13)	0.083	1.53 (1.00, 2.34)	0.051
6x6 mm² HD macula/4.5x4.5 mm² non-HD ONH	1.51 (1.01, 2.25)	**0.044**	1.59 (1.04, 2.44)	**0.032**

IOP: intraocular pressure, CCT: central corneal thickness, VF: visual field, MD: mean deviation, PSD: pattern standard deviation, D: diopter, HD: high density, ONH: optic nerve head.

This sub analysis includes 1558 (66.2%) good quality and 794 (33.8%) poor quality images.

* *P*-values with statistical significance (*P* < 0.05) are shown in bold.

Supplemental Table 8. Sensitivity Analysis for Automated Quality measures of Optovue OCTA Instrument to Identify Good Quality OCTA Images[*]

Index	Cut-off	Sensitivity	Specificity
QS	5	98 %	11 %
	6	88 %	42 %
	7	70 %	69 %
	8	42 %	90 %
	9	13 %	99 %
SSI	50	94 %	24 %
	55	84 %	43 %
	60	67 %	62 %
	65	45 %	80 %
	70	25 %	92 %

QS: quality score, SSI: signal strength index.

* OCTA images with QS ≥ 4 were included.