

## **Stability of OCT and OCTA in the intensive therapy unit setting.**

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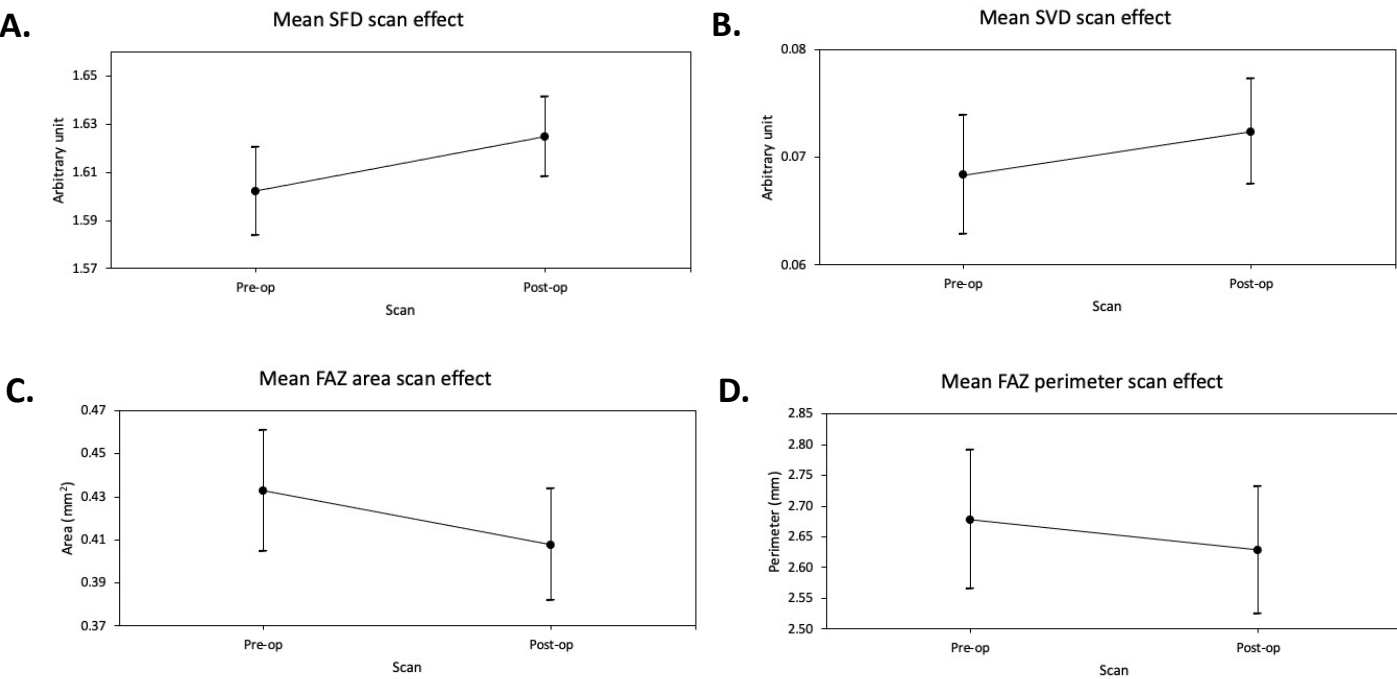
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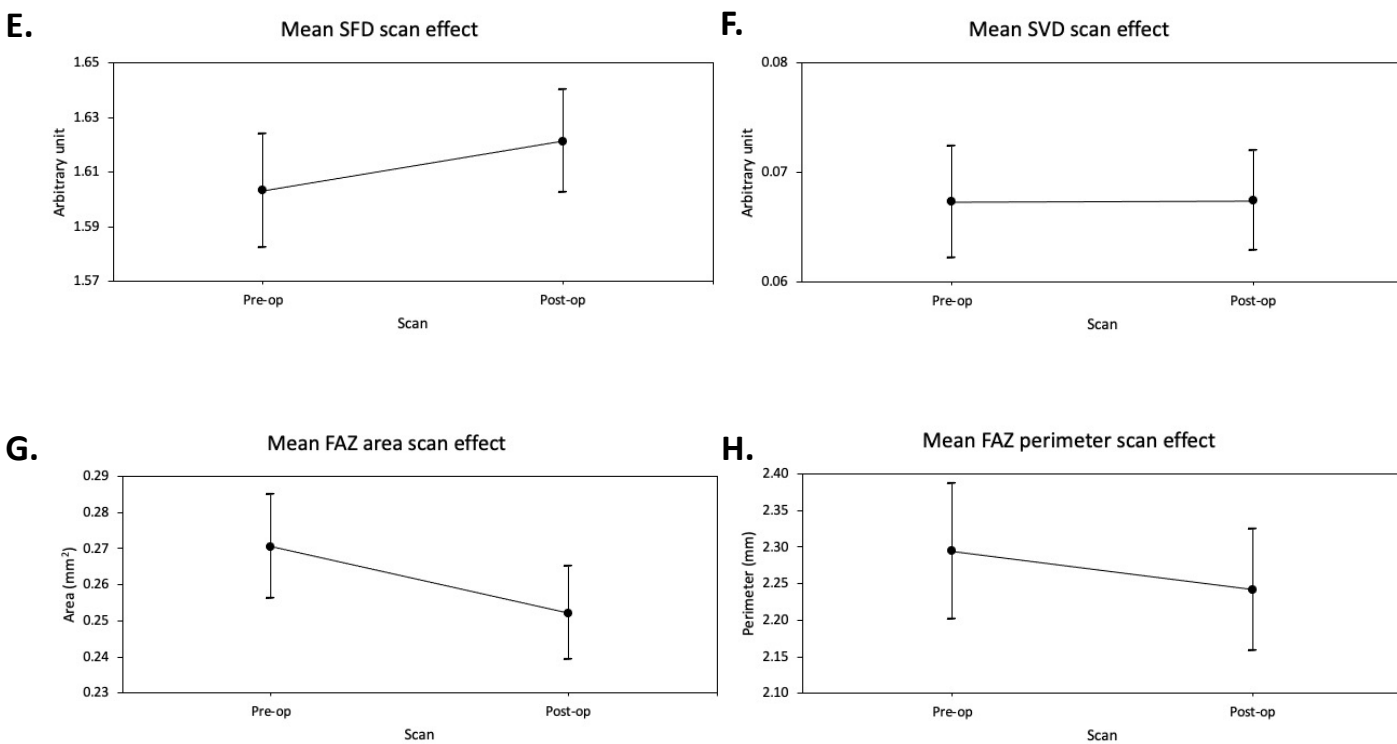
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# Superficial vascular plexus

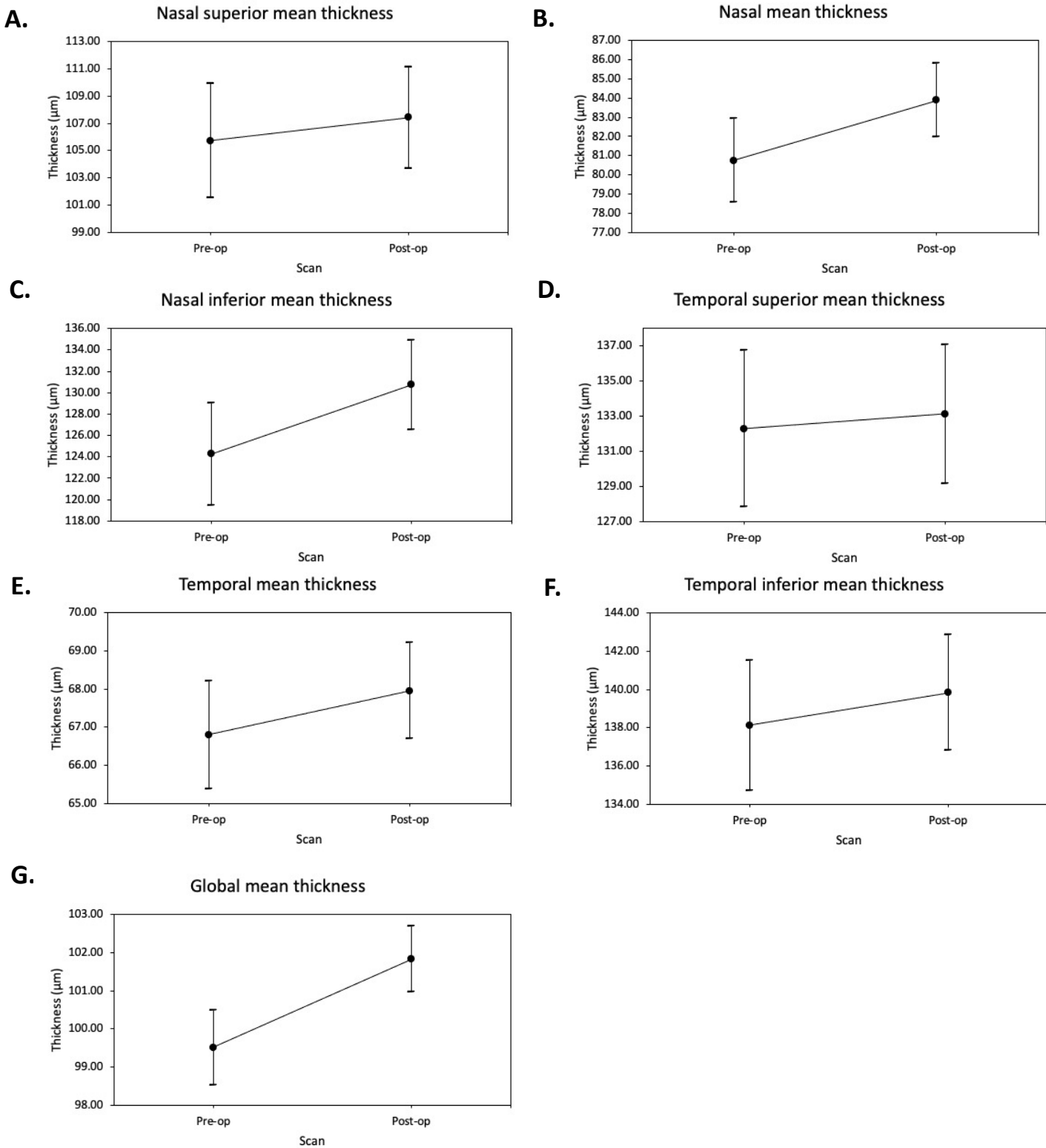


# Intermediate capillary plexus



**Figure S1.** Superficial vascular plexus and intermediate capillary plexus patient timepoint effect mean graphs. Mean difference between scan time points for each measure, with no evidence of a systematic difference between timepoints. Error bars show the 95% confidence interval upper and lower limits. **A.** Mean difference in skeletal fractal dimension (SFD) of the superficial vascular plexus (SVP) between scans. **B.** Mean difference in skeletal vessel density (SVD) of the SVP between scans. **C.** Mean difference in foveal avascular zone (FAZ) area (measured in mm<sup>2</sup>) of the SVP between scans. **D.** Mean difference in FAZ perimeter (measured in mm) of the SVP between scans. **E.** Mean difference in SFD of the intermediate capillary plexus (ICP) between scans. **F.** Mean difference in SVD of the ICP between scans. **G.** Mean difference in the FAZ area (measured in mm<sup>2</sup>) of the ICP between scans. **H.** Mean difference in the FAZ perimeter (measured in mm) of the ICP between scans. Abbreviations. SVP: superficial vascular plexus; SFD: skeletal fractal dimensions; SVD: skeletal vessel density; FAZ: foveal avascular zone; ICP: intermediate capillary plexus.

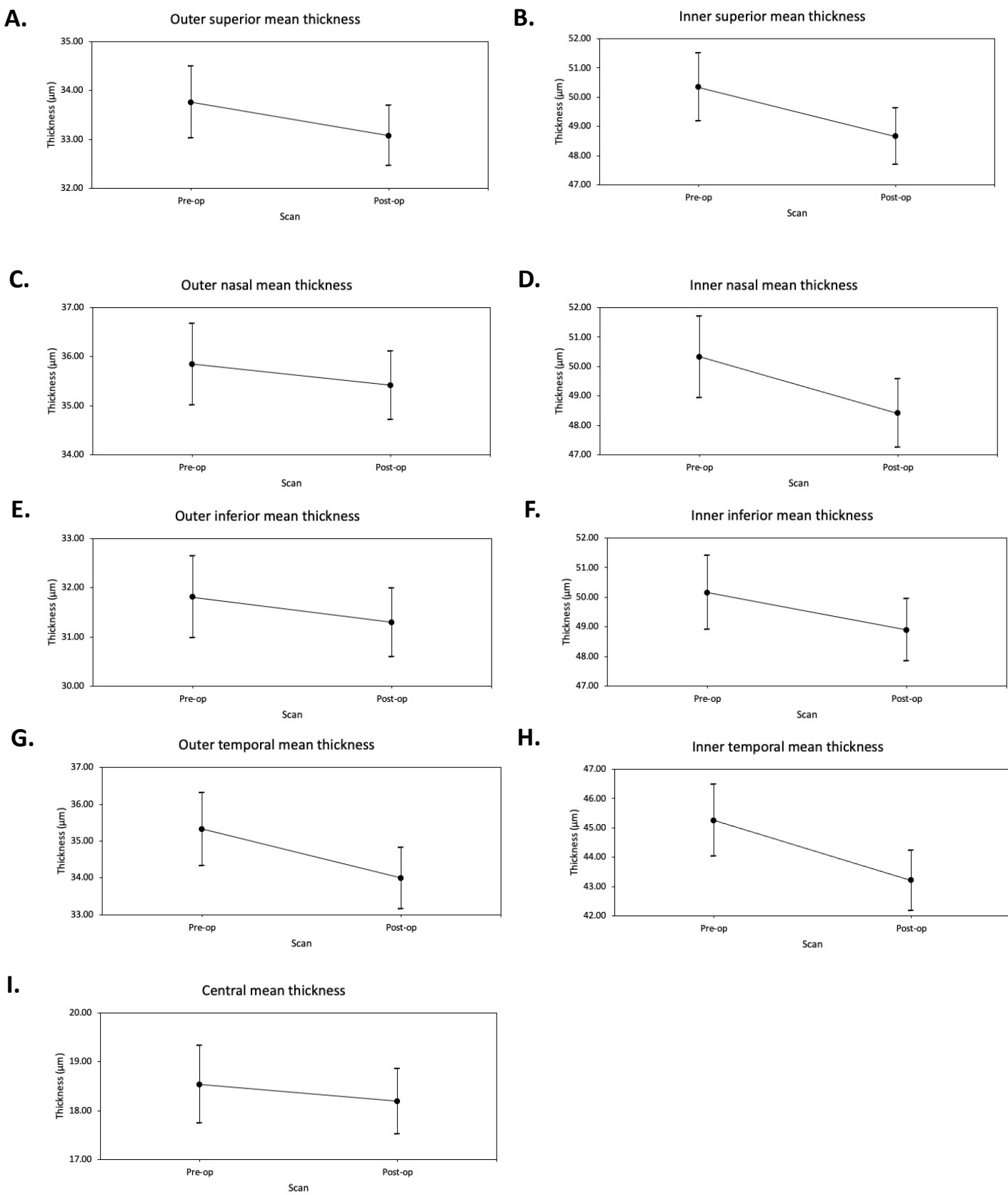
# Retinal nerve fibre layer



**Figure S2.** Retinal nerve fibre layer thickness - timepoint effect mean graphs. These graphs show the mean patient difference between each scan timepoint taken measuring the retinal nerve fibre layer (RNFL) thickness, in all 7 segments. All thicknesses are measured in  $\mu m$ . Error bars show the 95% confidence interval upper and lower limits.

**A.** Mean difference in RNFL nasal superior thickness between timepoints. **B.** Mean difference in RNFL nasal thickness between scans. **C.** Mean difference in RNFL nasal inferior thickness between timepoints. **D.** Mean difference in RNFL temporal superior thickness between timepoints. **E.** Mean difference in RNFL temporal thickness between timepoints. **F.** Mean difference in RNFL temporal inferior thickness between timepoints. **G.** Mean difference in RNFL global thickness between timepoints.

# Ganglion cell layer



**Figure S3.** Ganglion cell layer thickness - timepoint effect mean graphs.  
Mean patient difference between each scan taken measuring the ganglion cell layer (GCL) thickness, in all 9 segments. All thicknesses are measured in  $\mu m$ . Error bars show the 95% confidence interval upper and lower limits.  
**A.** Mean difference in GCL outer superior thickness between timepoints. **B.** Mean difference in GCL inner superior thickness between timepoints. **C.** Mean difference in GCL outer nasal thickness between timepoints. **D.** Mean difference in GCL inner nasal thickness between timepoints. **E.** Mean difference in GCL outer inferior thickness between timepoints. **F.** Mean difference in GCL inner inferior thickness between timepoints. **G.** Mean difference in GCL outer temporal thickness between timepoints. **H.** Mean difference in GCL inner temporal thickness between timepoints. **I.** Mean difference in GCL central thickness between timepoints.

**Table S1a. Extent of scan completion in participants.** Abbreviations. OCT: optical coherence tomography; OCTA: optical coherence tomography angiography; OD: right eye; RNF: retinal nerve fibre layer.

Participant	Pre-op scans	24-48 hours post-op scans	7 day post-op scans	Comments
O1	Well-tolerated, all scans obtained. Not dilated.	Well-tolerated, all scans obtained. Dilated.	Well-tolerated, all scans obtained. Dilated.	Uncomplicated post-op course.
O2	Well-tolerated, all scans obtained.	Difficulty obtaining scans due to fatigue causing poor fixation. Dilated.	Well-tolerated, all scans obtained with patient supine with pillows supporting their head. Dilated.	Uncomplicated post-op course.
O3	Well-tolerated, all scans obtained.	OCT scans obtained but unable to collect OCTA scans due to fatigue. Dilated.	Well-tolerated, all scans obtained with patient semi-recumbent.	Uncomplicated post-op course.
O4	Well-tolerated, all scans obtained.	Well-tolerated, all scans obtained with patient supine in bed with pillows supporting their head. Not dilated.	Well-tolerated, all scans obtained with patient semi-recumbent.	Uncomplicated post-op course.
O5	Well-tolerated, all scans obtained.	Only OD OCTA obtained due to patient experiencing pain. Dilated.	Well-tolerated, all scans obtained with patient semi-recumbent. Not dilated.	Uncomplicated post-op course.
O6	Well-tolerated, all scans obtained.	Some difficulty obtaining scans. Patient sitting in a chair with head unsupported.	Well-tolerated, all scans obtained with patient seated in a chair.	Uncomplicated post-op course.
O7	Well-tolerated, all scans obtained.	Well-tolerated, all scans obtained. Not dilated.	Unable to image as patient was discharged.	Uncomplicated post-op course.
O8	Well-tolerated, all scans obtained with patient semi-recumbent.	Well-tolerated, all scans obtained with patient semi-recumbent. Dilated.	Unable to image as patient was discharged.	Uncomplicated post-op course.
O9	Well-tolerated, all scans obtained but poor fixation.	Only OCT macula and RNFL obtained, due to patient experiencing pain and fatigue. Patient was seated. Dilated.	Only macula scan obtained. Dilated.	Uncomplicated post-op course.
O10	Well-tolerated, all scans obtained but poor fixation.	No scans obtained due to patient fatigue.	No scans obtained.	Uncomplicated post-op course.
O11	Well-tolerated, all scans obtained.	All scans obtained with patient supine in bed with the head supported by pillows. Dilated.	Well-tolerated, all scans obtained with patient seated in a chair. Not dilated.	Uncomplicated post-op course.
O12	Well-tolerated, all scans obtained.	Well-tolerated, all scans obtained. Not dilated.	Well-tolerated, all scans obtained. Not dilated.	Uncomplicated post-op course.
O13	Well-tolerated, all scans obtained.	Well-tolerated, all scans obtained. Dilated.	NA	Uncomplicated post-op course.
O14	Well-tolerated, all scans obtained.	Well-tolerated, all scans obtained. Not dilated.	NA	Uncomplicated post-op course.
O15	Well-tolerated, all scans obtained.	Well-tolerated, all scans obtained. Not dilated.	NA	Uncomplicated post-op course.
O16	Well-tolerated, all scans obtained.	Well-tolerated, all scans obtained. Not dilated.	NA	Uncomplicated post-op course.
O17	Well-tolerated, all scans obtained.	Well-tolerated, all scans obtained. Not dilated.	NA	Uncomplicated post-op course.
O18	Well-tolerated, all scans obtained.	Well-tolerated, all scans obtained. Not dilated.	NA	Uncomplicated post-op course.

**Table S1b. Haemodynamic parameters of participants.** Abbreviations. BP: blood pressure; HR: heart rate; pO<sub>2</sub>: partial pressure of oxygen; FiO<sub>2</sub>: fraction of inspired oxygen

Participant	24-48 hour post-op scans				7 day post-op scans		
	BP (mmHg)	HR (bpm)	pO <sub>2</sub> (kPa)	FiO <sub>2</sub>	BP (mmHg)	HR (bpm)	SaO <sub>2</sub> (%)
O1	133/56	66	9.7	0.28	118/47	85	96
O2	119/63	79	11.5	0.40	138/88	97	97
O3	101/62	88	9.6	0.28	117/85	82	95
O4	116/61	82	11.4	0.28	132/84	84	95
O5	122/66	83	9.0	0.70	124/64	63	93
O6	133/57	70	12.2	0.24	135/79	91	96
O7	114/53	53	13.8	0.24	NA	NA	NA
O8	126/58	72	9.9	0.36	NA	NA	NA
O9	124/68	65	11.3	0.50	144/76	101	95
O10	115/57	73	12.3	0.24	NA	NA	NA
O11	120/68	80	11.7	0.25	127/84	70	95
O12	126/68	69	12.1	0.28	118/64	70	95
O13	108/67	83	10.6	0.50	NA	NA	NA
O14	102/59	75	5.3	0.26	NA	NA	NA
O15	130/75	78	10.7	0.36	NA	NA	NA
O16	118/53	80	9.9	0.28	NA	NA	NA
O17	147/93	108	10.3	0.28	NA	NA	NA
O18	124/85	73	4.8	0.21	NA	NA	NA

**Table S2.** Mean difference between timepoints (1, pre-op; 2 and 3, 24 h and 7 days post-op) of the retinal nerve fibre layer and ganglion cell layer thicknesses (measured in  $\mu\text{m}$ ).

Retinal layer	Segment	Timepoint	Mean thickness ( $\mu\text{m}$ )	95% confidence interval ( $\mu\text{m}$ )
Retinal nerve fibre layer	Nasal superior	1 2 and 3	105.715 107.432	101.513 to 109.917 103.705 to 111.158
	Nasal	1 2 and 3	80.744 83.885	78.568 to 82.920 81.956 to 85.815
	Nasal inferior	1 2 and 3	124.249 130.711	119.495 to 129.003 126.495 to 134.927
	Temporal superior	1 2 and 3	132.284 133.115	127.823 to 136.746 129.158 to 137.072
	Temporal	1 2 and 3	66.802 67.953	65.389 to 68.215 66.700 to 69.206
	Temporal inferior	1 2 and 3	138.120 139.837	134.725 to 141.514 136.826 to 142.847
	Global	1 2 and 3	99.510 101.821	98.535 to 100.486 100.956 to 102.687
Ganglion cell layer	Outer superior	1 2 and 3	33.757 33.071	33.025 to 34.490 32.455 to 33.687
	Inner superior	1 2 and 3	50.339 48.656	49.179 to 51.499 47.681 to 49.631
	Outer nasal	1 2 and 3	35.844 35.418	35.012 to 36.676 34.718 to 36.117
	Inner nasal	1 2 and 3	50.318 48.405	48.941 to 51.696 47.247 to 49.563
	Outer inferior	1 2 and 3	31.812 31.297	30.979 to 32.645 30.597 to 31.998
	Inner inferior	1 2 and 3	50.155 48.889	48.904 to 51.406 47.837 to 49.941
	Outer temporal	1 2 and 3	35.323 33.994	34.335 to 36.311 33.163 to 34.825
	Inner temporal	1 2 and 3	45.250 43.209	44.025 to 46.475 42.179 to 44.239
	Central	1 2 and 3	18.537 18.188	17.736 to 19.338 17.515 to 18.861

**Table S3.** Summary of vessel layer densities, including standard deviation (SD). N refers to number of scans included for each eye – left (OS) and right (OD). Timepoints: 1, pre-op; 2, 24 h and 7 days post-op. Abbreviations. FAZ: foveal avascular zone.

Vessel Layer	Measure	Scan	OS			OD		
			N	Mean	SD	N	Mean	SD
Superficial vascular plexus	Skeletal fractal dimension	1	18	1.588	0.084	17	1.613	0.054
		2	16	1.623	0.061	15	1.638	0.042
		3	6	1.583	0.076	6	1.647	0.031
	Skeletal density	1	18	0.065	0.025	17	0.070	0.019
		2	16	0.072	0.021	15	0.077	0.019
		3	6	0.058	0.022	6	0.080	0.015
	FAZ area (mm <sup>2</sup> )	1	17	0.472	0.212	17	0.421	0.167
		2	15	0.415	0.147	15	0.375	0.122
		3	4	0.385	0.028	6	0.412	0.104
	FAZ perimeter (mm)	1	17	2.759	0.650	17	2.649	0.440
		2	15	2.651	0.583	15	2.475	0.440
		3	4	2.593	0.169	6	2.830	0.527
Intermediate capillary plexus	Skeletal fractal dimension	1	18	1.589	0.086	17	1.619	0.046
		2	16	1.612	0.083	15	1.634	0.034
		3	6	1.587	0.060	6	1.647	0.025
	Skeletal density	1	18	0.064	0.023	17	0.070	0.012
		2	16	0.066	0.021	15	0.071	0.014
		3	6	0.055	0.016	6	0.076	0.012
	FAZ area (mm <sup>2</sup> )	1	15	0.285	0.121	16	0.261	0.135
		2	14	0.250	0.107	14	0.234	0.111
		3	4	0.277	0.072	6	0.271	0.092
	FAZ perimeter (mm)	1	15	2.368	0.486	16	2.191	0.535
		2	14	2.252	0.610	14	2.102	0.526
		3	4	2.638	0.516	6	2.367	0.410



**Table S4.** Summary of retinal structural layer thicknesses. N refers to number of scans included for each eye – left (OS) and right (OD). Timepoints: 1, pre-op; 2, 24 h and 7 days post-op.

Retinal Layer	Segment	Scan	OS			OD		
			N	Mean	SD	N	Mean	SD
Retinal nerve fibre layer	Nasal superior	1	18	107	30	17	98	21
		2	16	108	31	15	102	22
		3	7	128	30	6	113	17
	Nasal	1	18	78	12	17	83	12
		2	16	83	16	15	87	16
		3	7	81	17	6	83	15
	Nasal inferior	1	18	121	32	17	125	26
		2	16	134	43	15	128	30
		3	7	134	46	6	130	35
	Temporal inferior	1	18	140	22	17	133	24
		2	16	141	26	15	138	28
		3	7	152	29	6	138	36
	Temporal	1	18	66	11	17	67	14
		2	16	66	11	15	68	15
		3	7	71	11	6	76	13
	Temporal superior	1	18	128	24	17	133	21
		2	16	129	24	15	133	29
		3	7	138	16	6	151	14
	Global	1	18	98	13	17	99	13
		2	16	101	14	15	101	14
		3	7	107	13	6	106	14
Ganglion cell layer	Outer superior	1	18	32.8	5.8	17	33.9	4.9
		2	17	33.1	4.3	16	34.0	4.6
		3	8	31.4	5.2	8	34.6	4.0
	Inner superior	1	18	49.8	5.0	17	50.2	6.7
		2	17	47.8	4.5	16	49.3	6.8
		3	8	47.8	9.1	8	51.5	4.5
	Outer nasal	1	18	36.3	5.0	17	34.4	6.0
		2	17	35.8	4.6	16	34.9	5.7
		3	8	36.6	6.9	8	36.5	5.0
	Inner nasal	1	18	49.7	5.8	17	50.5	5.6
		2	17	46.7	6.2	16	49.7	6.8
		3	8	48.4	6.8	8	50.5	6.2
	Outer inferior	1	18	31.4	4.3	17	31.1	5.4
		2	17	31.2	4.5	16	31.4	5.4
		3	8	31.1	6.6	8	33.8	4.4
	Inner inferior	1	18	50.1	5.0	17	49.9	5.5
		2	17	48.8	4.6	16	48.6	8.4
		3	8	50.6	4.8	8	48.6	5.6
	Outer temporal	1	18	34.4	5.2	17	35.2	5.8
		2	17	33.3	4.6	16	34.3	6.7
		3	8	34.1	5.4	8	37.0	5.3
	Inner temporal	1	18	45.4	4.5	17	44.7	6.0
		2	17	43.8	5.7	16	42.8	7.0
		3	8	43.3	6.3	8	43.5	3.5
	Central	1	18	19.0	5.4	17	18.1	5.3
		2	17	18.5	4.5	16	18.8	5.5
		3	8	17.1	3.0	8	17.3	2.7