EURETINA
22nd Euretina Congress Hamburg
1-4 September 2022

Diabetic Foveal Avascular Zone

Differences Between High Speed And High Resolution Scans

IPL/2021/DiffMeDiME_ESTeSL

BRUNO PEREIRA[1, 2, 3], INÊS ANACLETO[3], JOÃO PIRES[3], VERÓNICA SANTOS[3], CATARINA TARRACHA[3], TERESA VARANDAS[2, 4], PEDRO CAMACHO[2, 3, 5]

[1]INSTITUTO DE RETINA DE LISBOA, [2]NOVA MEDICAL SCHOOL, [3]ESTESL, [4]APDP, [5]INSTITUTE OF OPHTHALMOLOGY DR. GAMA PINTO, LISBON, PORTUGAL

Financial Disclosure

No relevant conflicts of interest to declare.

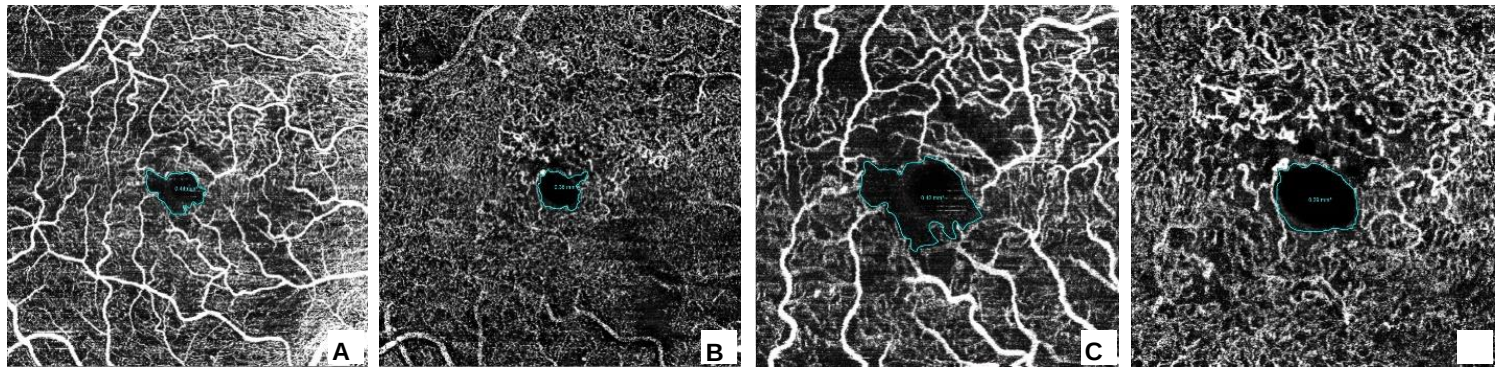
Purpose

Diabetic Retinopathy is one of the causes of pathological increase of the Foveal Avascular Zone (FAZ) area and is assessable by optical coherence tomography angiography (OCTA).

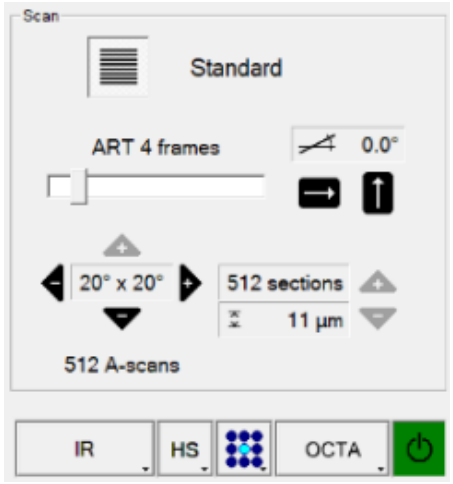
Even using the same equipment, different acquisition protocols may lead to different results.

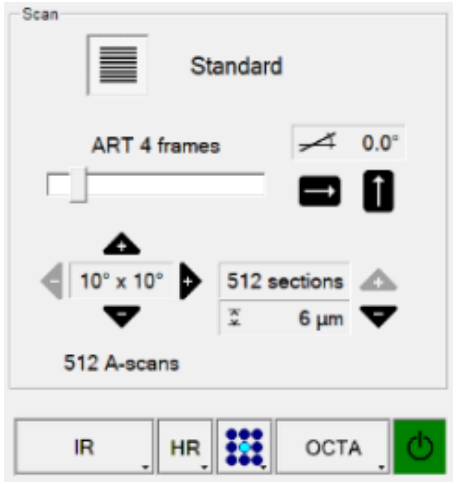
AIM

To evaluate the differences in manual FAZ area measurements comparing two different OCTA acquisition protocols, High Speed (HS) versus High Resolution (HS).



Methods





A sample of 26 participants in a study regarding differential DNA methylation in persistent Diabetic Macular Edema were included.

Using Heidelberg Spectralis HRA+OCT2®, two fovea centered OCT-A scans were acquired, **10°x10° HR** and **20°x20° HS**.

Methods

Two observers manually measured the FAZ area **twice** on each HR and HS scans using the area measurement tool in Heidelberg Eye Explorer software in auto-segmented:

- Superficial vascular complex (SVC)
- Deep vascular complex (DVC)

DATA ANALYSIS

- Intra and Inter-observer variability was analyzed.
- Differences between the HS and HR FAZ area measurements were calculated,
- Intraclass Correlation Coefficients (ICC) was calculated.

Results

				Difference (mm²)	95% CI (mm²)	P-value	ICC
Intra-Observer	HS	SVC	Observer 1	0,037 ± 0,098	**0,004; 0,069**	0,210 [B]	0,986
			Observer 2	0,010 ± 0,052	-0,007; 0,027	0,332 [A]	0,995
		DVC	Observer 1	0,005 ± 0,102	-0,029; 0,039	0,664 [B]	0,981
			Observer 2	-0,013 ± 0,045	-0,028; 0,002	0,263 [B]	0,996
	HR	SVC	Observer 1	0,006 ± 0,055	-0,013; 0,025	0,575 [A]	0,988
			Observer 2	-0,008 ± 0,044	-0,024; 0,006	0,332 [A]	0,990
		DVC	Observer 1	0,013 ± 0,042	-0,001; 0,027	0,454 [B]	0,991
			Observer 2	0,000 ± 0,064	-0,020; 0,020	0,115 [B]	0,979
Inter-Observer	HS		SVC	0,018 ± 0,207	-0,052; 0,088	0,671 [A]	0,930
			DVC	0,052 ± 0,314	-0,054; 0,158	0,581 [C]	0,755
	HR		SVC	0,082 ± 0,134	**0,038; 0,126**	**0,043 [B]**	0,884
			DVC	0,042 ± 0,125	-0,001; 0,085	0,678 [B]	0,907
HS vs HR	SVC			0,112 ± 0,268	**0,021; 0,203**	0,108 [B]	0,758
	DVC			0,117 ± 0,250	**0,033; 0,201**	0,556 [B]	0,691

Differences represented as Mean ± standard deviation; CI – Confidence Interval; ICC – Intraclass Correlation Coefficient; HS - High-Speed; HR - High-Resolution; SVC - Superficial vascular complex ; DVC - Deep vascular complex; A – Paired sample T-Test; B – Sign Test; C – Wilcoxon Signed-Rank Test.

Results

- Differences betweeen HS and HR were:
  - 0,112±0,053 mm2 in the SVC
  - 0,087±0,037 mm2 in the DVC
- **FAZ area** measurement **was higher in HS** scans compared to HR scans.
- **ICC is lower in the DVC (0,691), compared to SVC (0,758).**

Conclusion

- Intra and inter-observer variability was almost null for both observers, for different vascular complexes using either HS or HR acquisition protocols.
- FAZ area measurement was higher using HS scans compared to HR scans
- Different acquisition protocols (different resolution) might impact FAZ area measurement

Future directions

- Is a combination of SVC+DVC FAZ area more precise comparing HS and HR protocols?
- Are automated FAZ area measurement methods also resolution dependent?