INTERNATIONAL CONGRESS OF THE
EGYPTIAN
OPHTHALMOLOGICAL SOCIETY

EOS 1902

In collaboration with: MEACO

Vault prediction algorithm with OCT and UBM platforms

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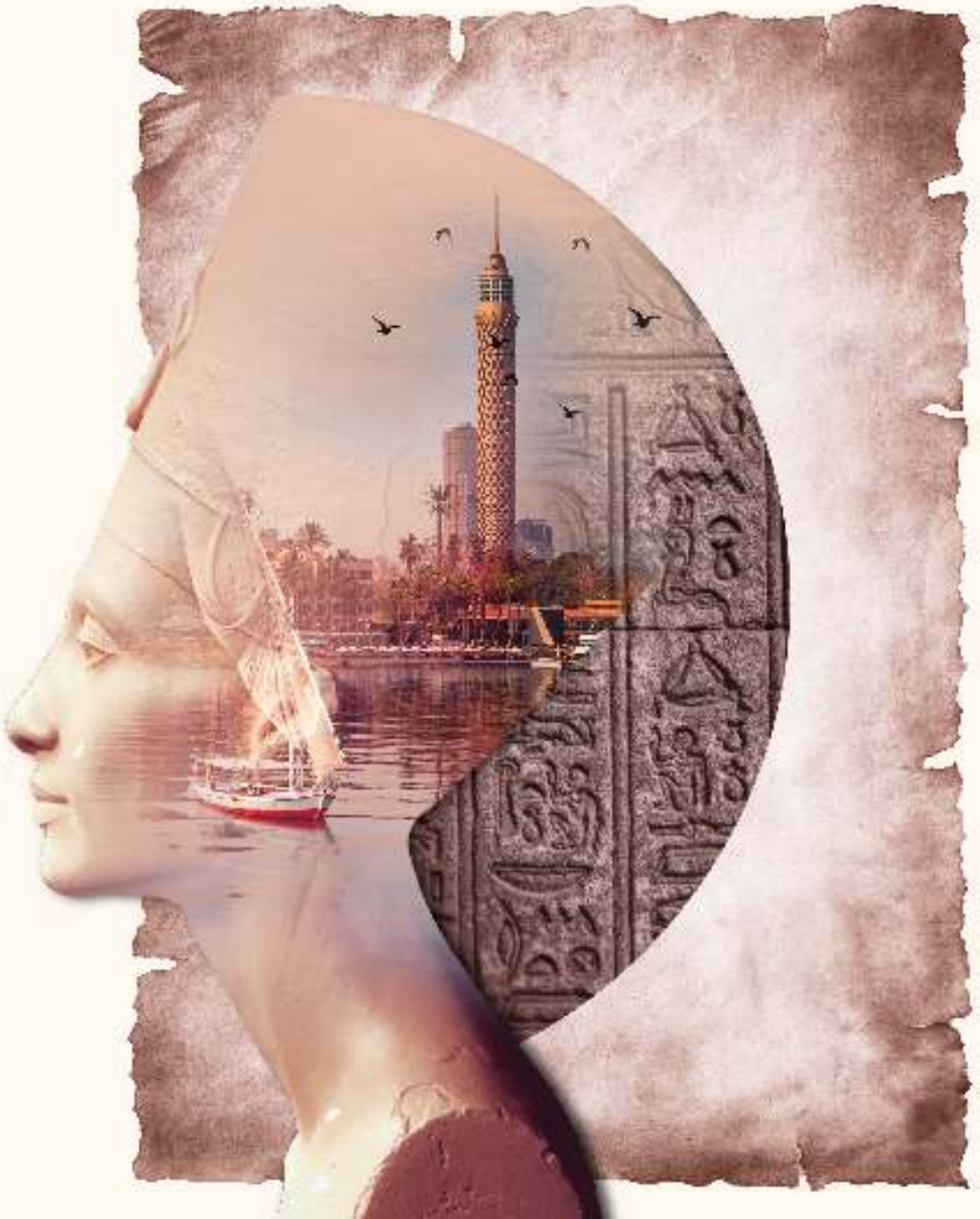
UVIC

BARRAQUER



Preop clinical data

Mean (SD) Median (Range)	Eyecryl group (36 eyes / 18 patients)
Manifest sphere (D)	-6,30 (4,86) -5,25 (-18.00 to 5.25)
Manifest cylinder (D)	-1.32 (0,99) -1.00 (-0.00 to -4.00)
SE (D)	-6,96 (4,79) -6,31 (-18.25 to 4.25)
ECD (cells/mm)^2	2721 (278) 2731 (1914 to 3253)
CCT (µm)	512 (33) 509 (450 to 607)
ACD (mm)	3.17 (0.26) 3.16 (2.80 to 3.80)
K1 (D)	43,66 (1.75) 43.75 (40.70 to 46.80)
K2 (D)	45.16 (1.57) 45.25 (42.70 to 48.40)
HIVD (mm)	11.87 (0.36) 11.83 (10.79 to 12.49)
Lens rise MS39 (µm)	-519 (166) -506 (-803 to -188)
Lens Rise CASIA 2	132 (162) 140 (-179 to 434)
ATA CASIA 2	12.11 (0.56) 12.17 (13,66 to 10.78)

P r e o p c l i n i c a l d a t a

VAULT analysis with 2 OCT: MS-39® and CASIA 2®

Mean (SD) **Median (Range)**	**Eyecryl group** **(36 eyes / 18 patients)**
Implanted Power IOL (Sph)	-8,33 D (±4,97) -8.50 (-19.00 to 4.50)
Implanted Power IOL (Cyl)	-1.14 D (±1.24) 0,75 (0.00 to 4.50)
Implanted Size	12.86 mm (± 0.40) 13.0 (12.00 to 13.50)

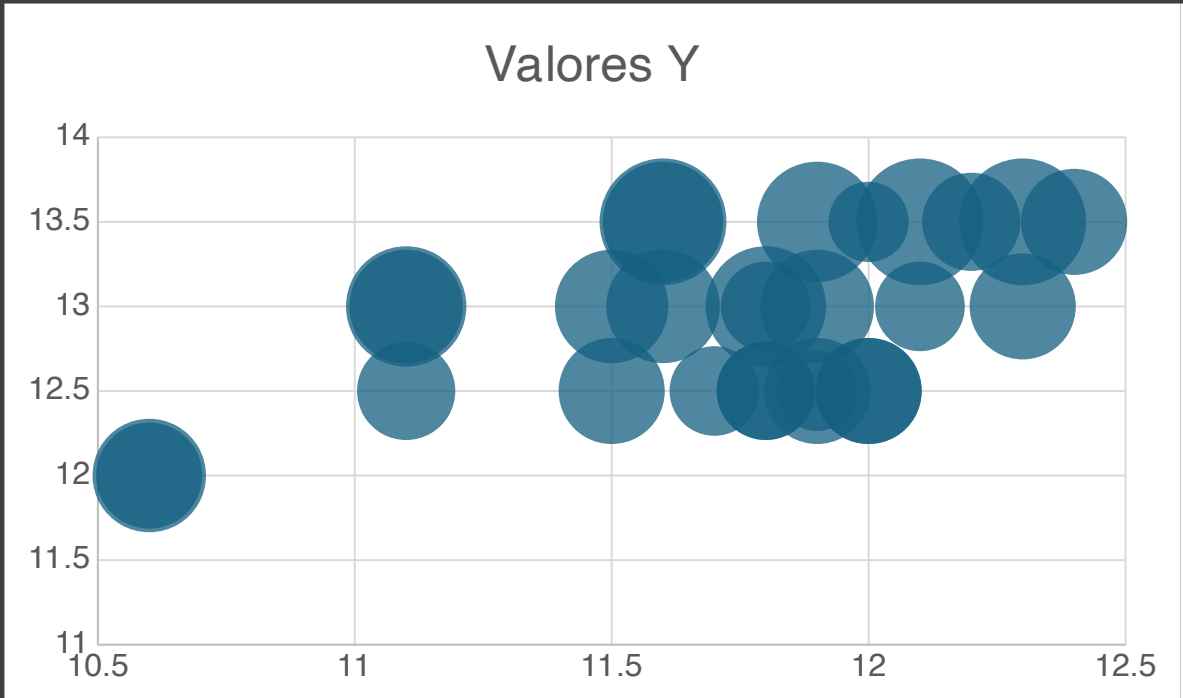
WTW
CLR

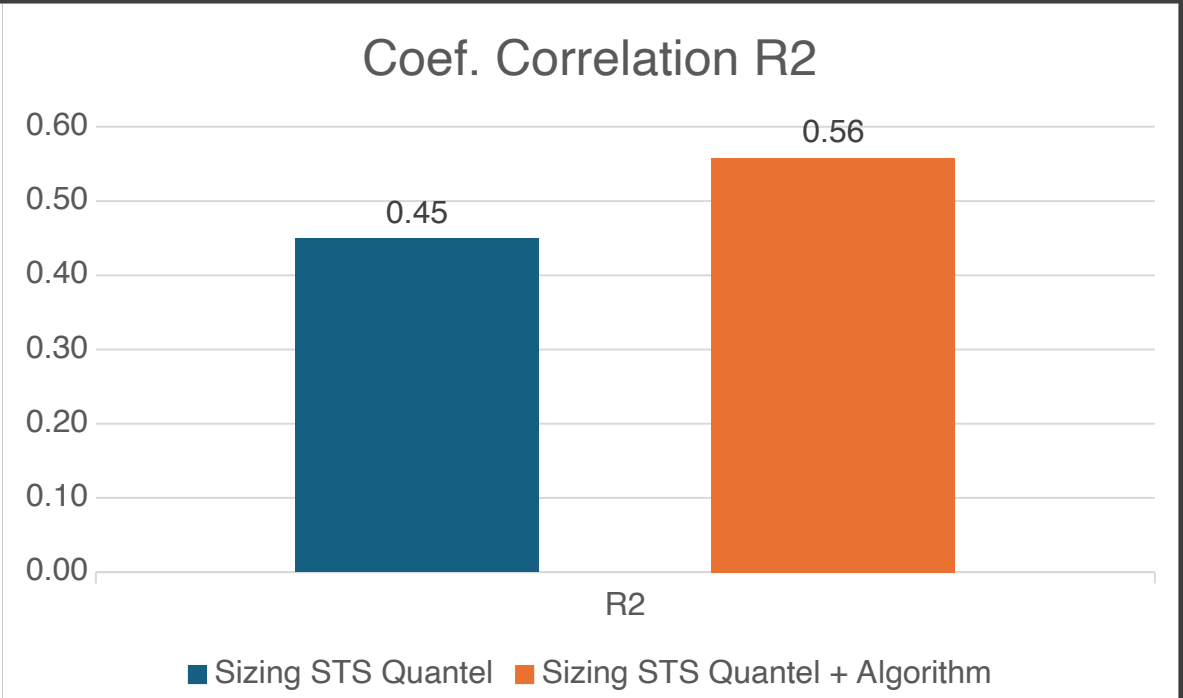
WTW
ATA
CLR

STS

WTW

UBM findings





R2 Correlation all formulas

Autor	Instrumentos	N.º de ojos	Fórmula	R^2
[illegible]	[illegible]	-	[illegible]	-
[illegible]	[illegible]	-	[illegible]	-
[illegible]	[illegible]	47	[illegible]	0,83
[illegible]	[illegible]	179	[illegible]	0,37
[illegible]	[illegible]	78	[illegible]	0,38
[illegible]	[illegible]	46	[illegible]	0,68
[illegible]	[illegible]	737	[illegible]	0,41
[illegible]	[illegible]	44	[illegible]	0,47
[illegible]	[illegible]	8	[illegible]	0,46
[illegible]	[illegible]	383	[illegible]	0,34
[illegible]	[illegible]	82	[illegible]	0,66
[illegible]	[illegible]	245	[illegible]	
[illegible]	[illegible]	2276	[illegible]	-
[illegible]	[illegible]	83	[illegible]	0,64
[illegible]	[illegible]	6257	[illegible]	0,30
[illegible]	[illegible]		[illegible]	
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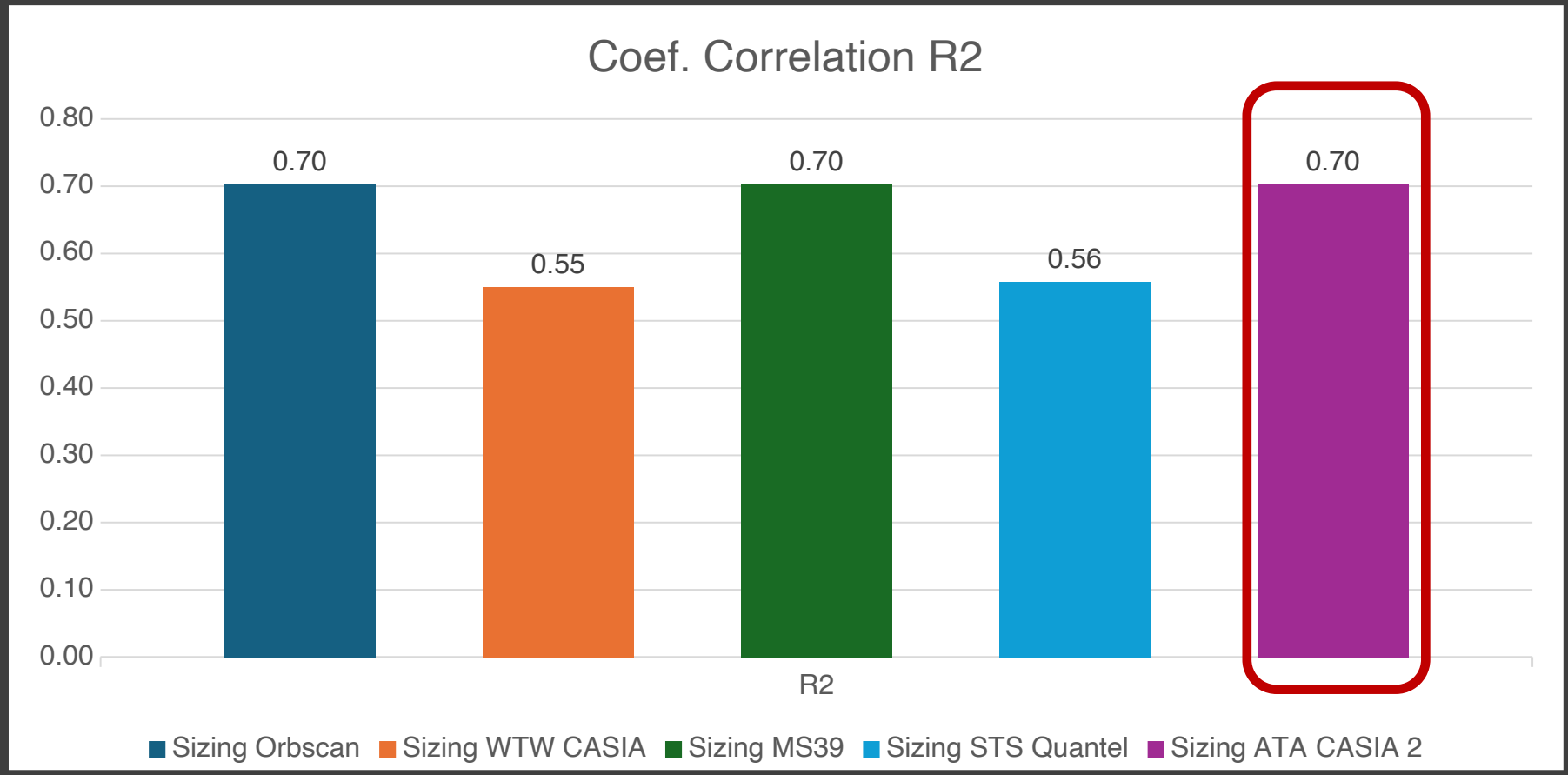
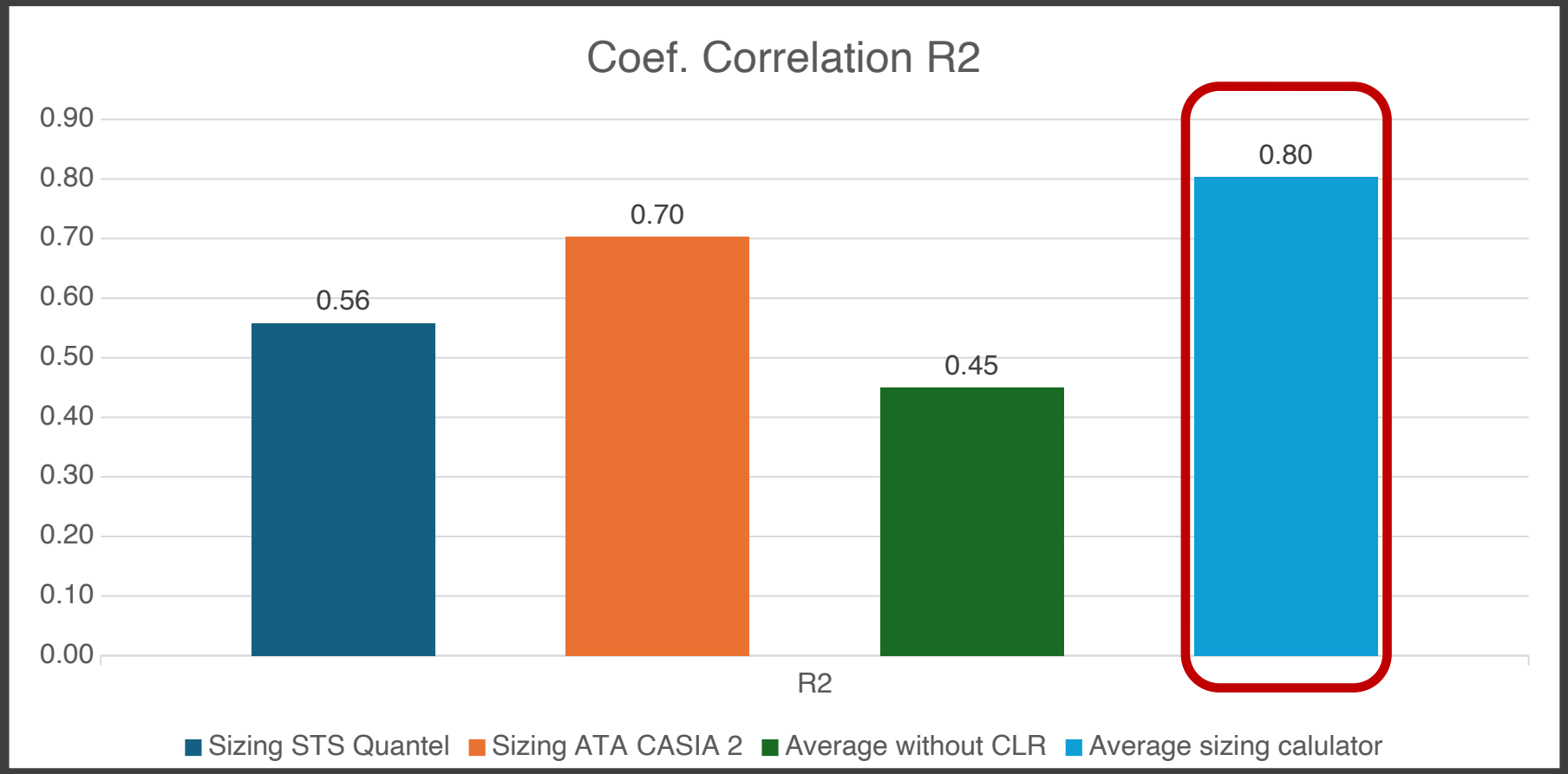
[illegible]	[illegible]	-	[illegible]	-
[illegible]	[illegible]	194	[illegible]	0,70

Autor	Instrumentos	N.º de ojos	Fórmula	R^2
Cui et al., 2023 (57)	BMU + Pentacam + OCT -SS Biometro	122	*Vault* = -2,179 - 0,227 (CTCv) - 0,783 (CLR medido de CTC) + 0,472 (ICL tamaño)	0,71
Eldanasoury et al., 2023 (58)	MS39 (OCT-SA)	237	ICL (talla) = 5,18 - 0,0189 (CRD) + 0,4019 (WTW) + 0,2478 (ATA) + 0,182 (CLR medida desde ATA)	-
Kim et al., 2023 (59)	Anterion (OCT-SA)	892	*Vault* = -1052,26 + 129,94 (AQD) - 134,54× ATA - 217,53 (LT) + 283,62 (ICL tamaño) ICL (talla) = 5,472 - 0,458 (AQD) + 0,474 (ATA) + 0,767 (EC)	0,34
Rocamora et al., 2023 (60)	IOLMaster700 + MS39	115	www.icl.emmetropia.be	-
Russo et al., 2023 (61)	MS39 (OCT-SA)	561	Inteligencia artificial	0,68
Wu et al., 2023 (62)	BMU+ Casia 2 + Sirius		*Vault* = -3119,43 + 414,98 (ICL tamaño) - 111,78 (ATA) - 0,59 (CLR medida desde ATA) - 3,12 (ASC)	0,67
Xu et al., 2021 (63)	BMU+ Visante + IOLMaster 700	137	*Vault* = -2279,6 + 575 (ICL tamaño) + 175,5 (ACD) - 161,2 ATA - 203,7 (WTW) - 190,4 (LT)	0,43
Yang et al., 2023 (14)	VG200d (OCT-SA)	226	*Vault* = -1,825,6 + 380,3 (ICL tamaño) + 294,3 (ACD) - 387,8 (ATA) - 0,22 (CLR medido desde ATA) - 5,0 (ACA temporal)	0,39
Di et al. 2023 (64)	Visante (OCT-SA)	150	*Vault* (@1 semana) = -1,279 + 0,291 (ACD) + 0,21 (ICL tamaño) - 0,144 (ATA)	0,67

Correlation between measurements and the perfect size

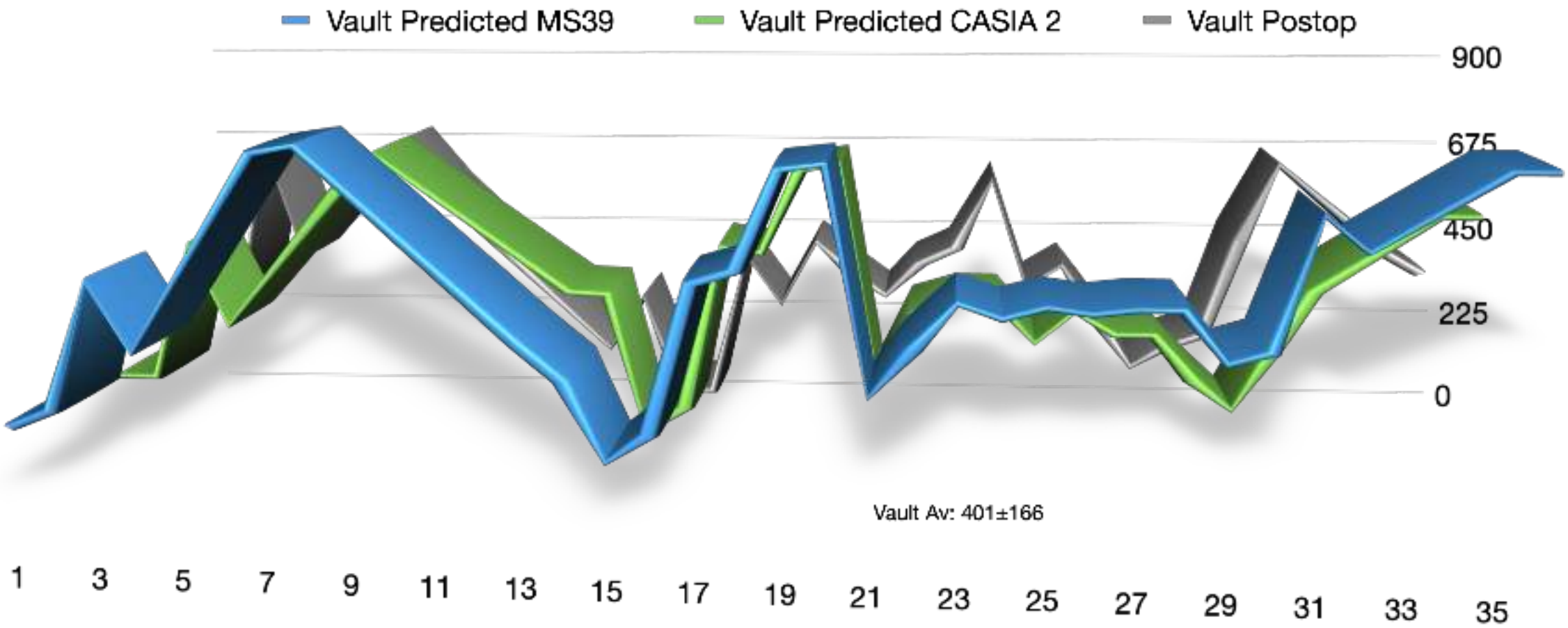


Correlation between measurements and the perfect size

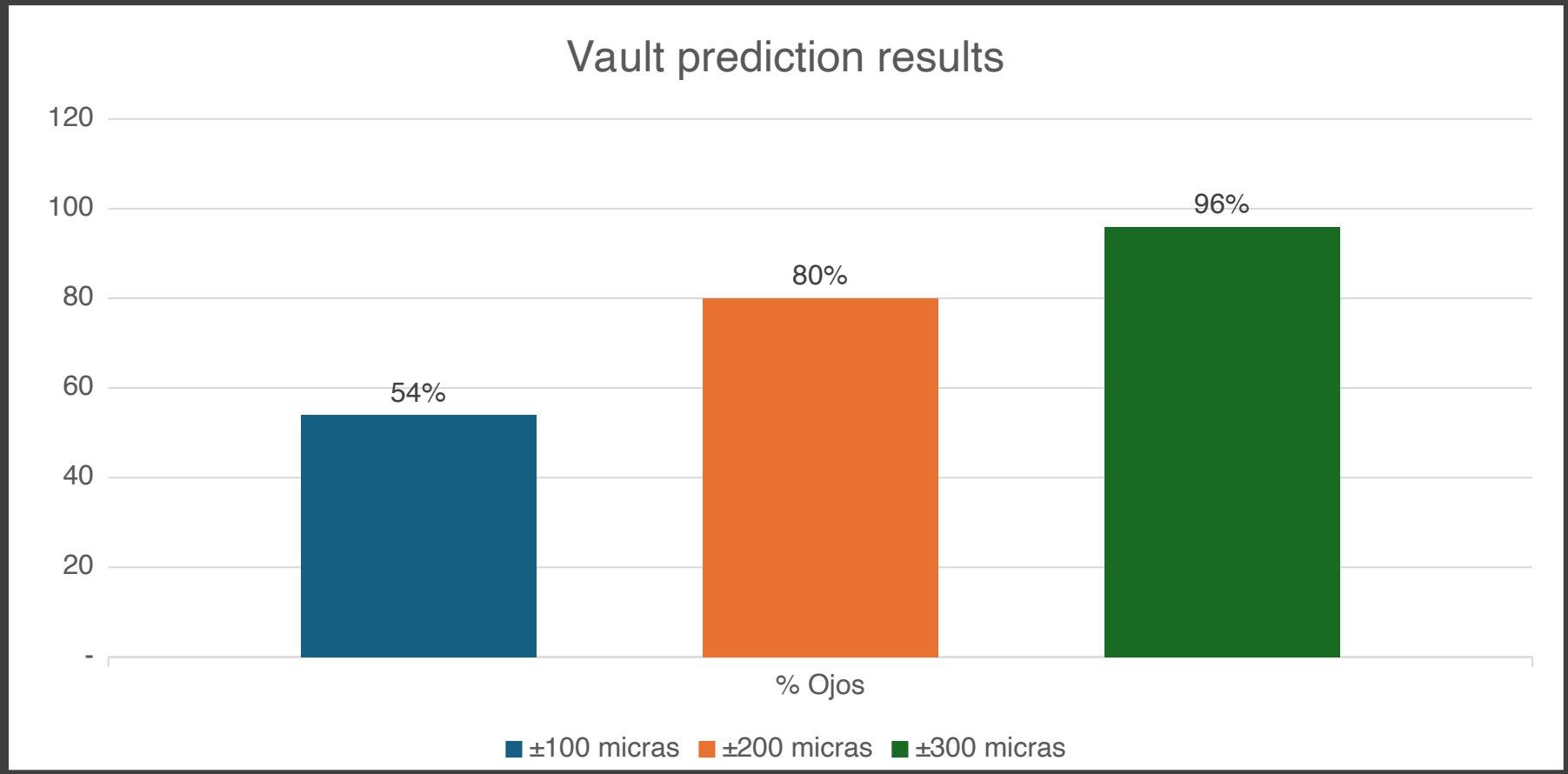


Biotech calculator nomogram for Eyecryl Phakic: MS39/CASIA 2

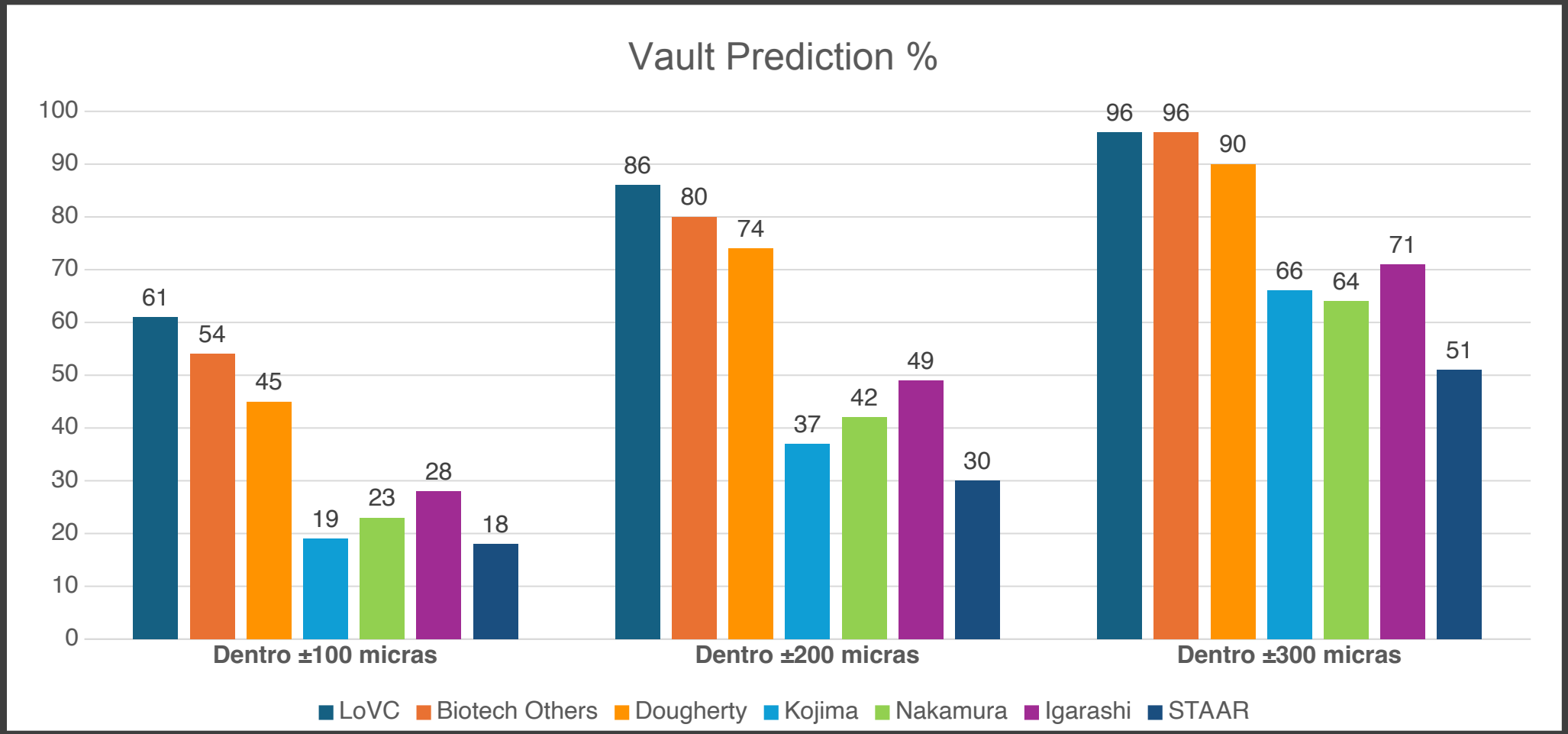
*Data from Centro de Oftalmología Barraquer



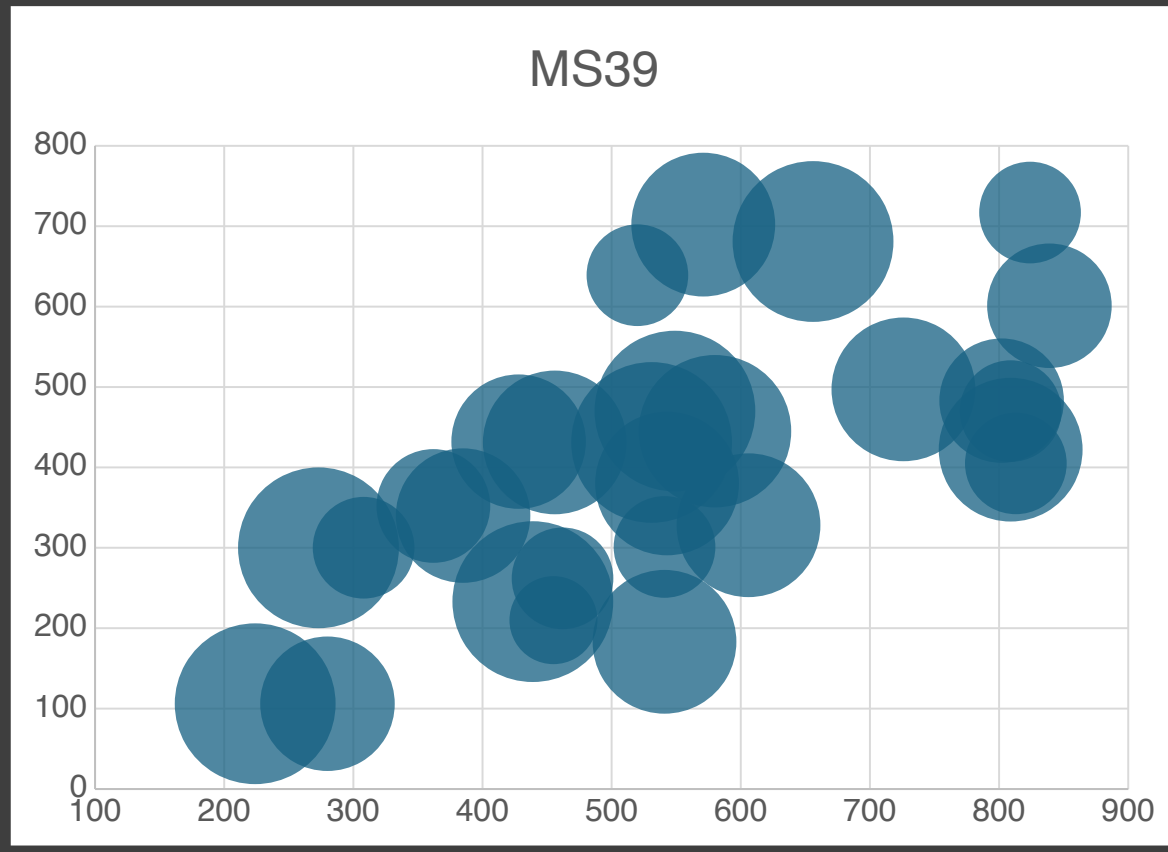
Vault prediction capability



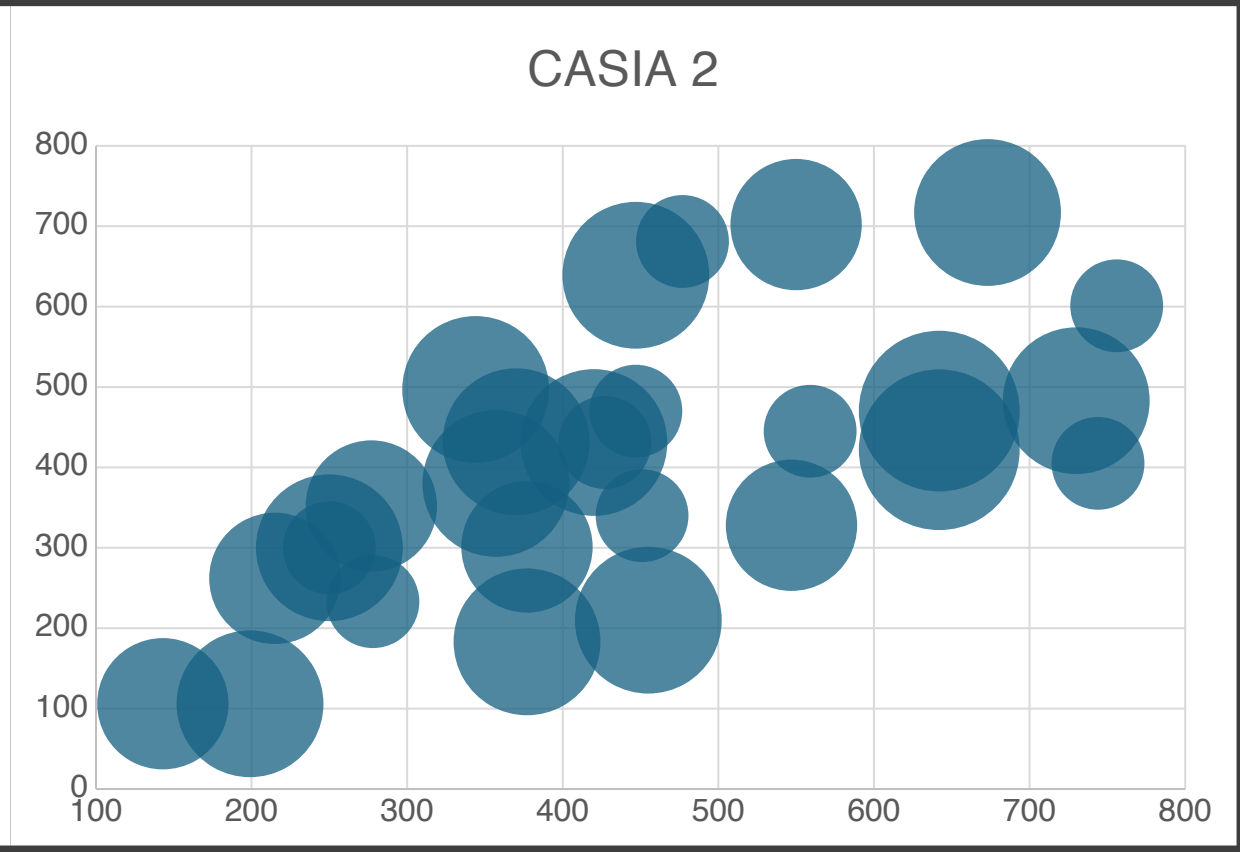
Vault prediction capability



Vault prediction capability (Automatic CLR)

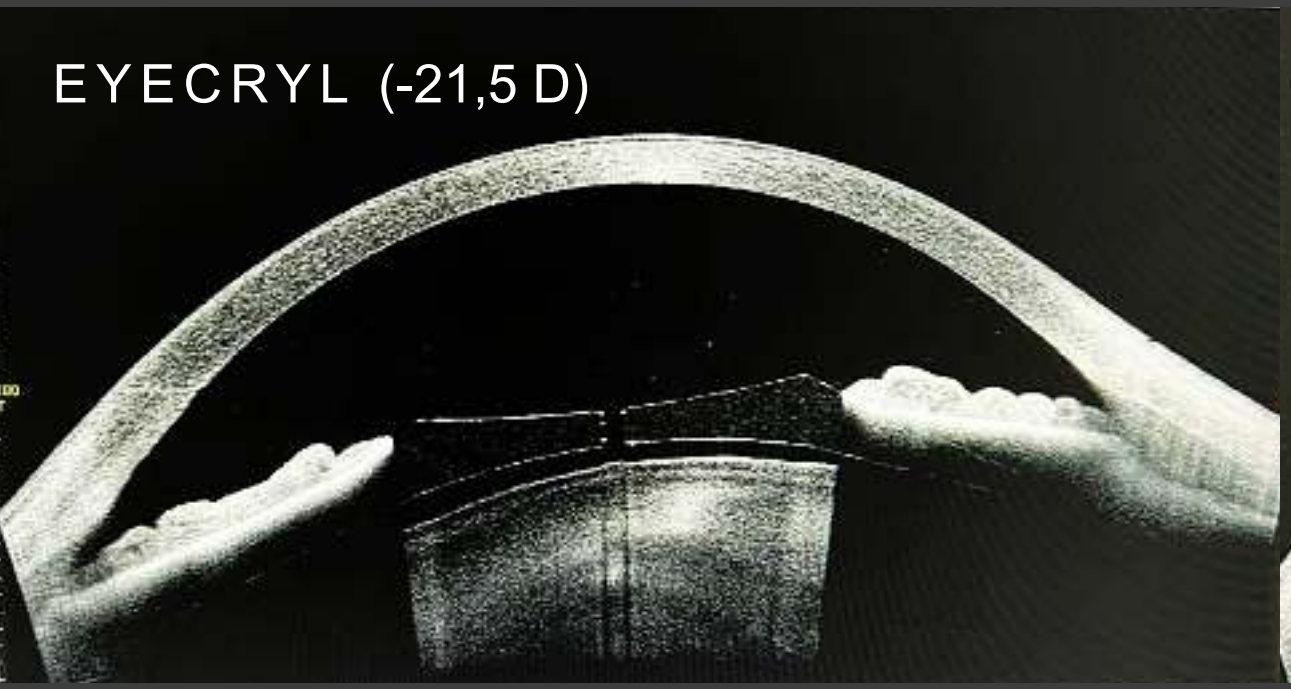


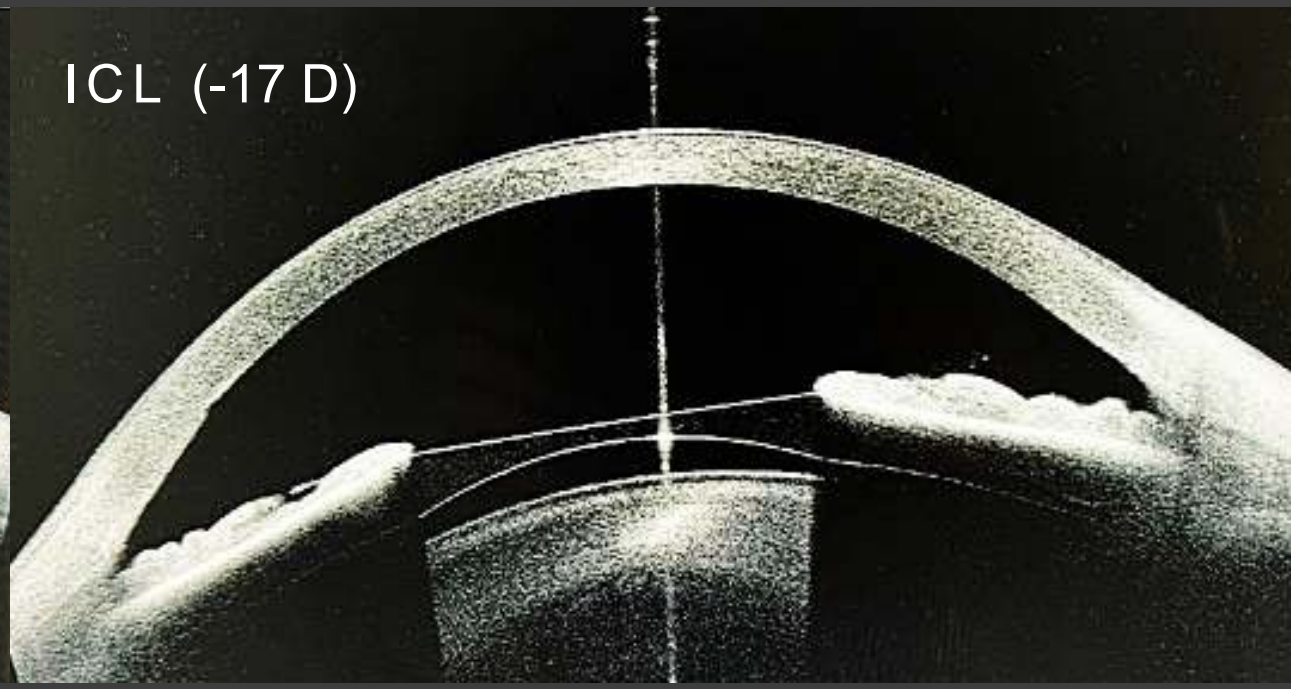
Coef. Correl: 0,640
R^2: 0,410



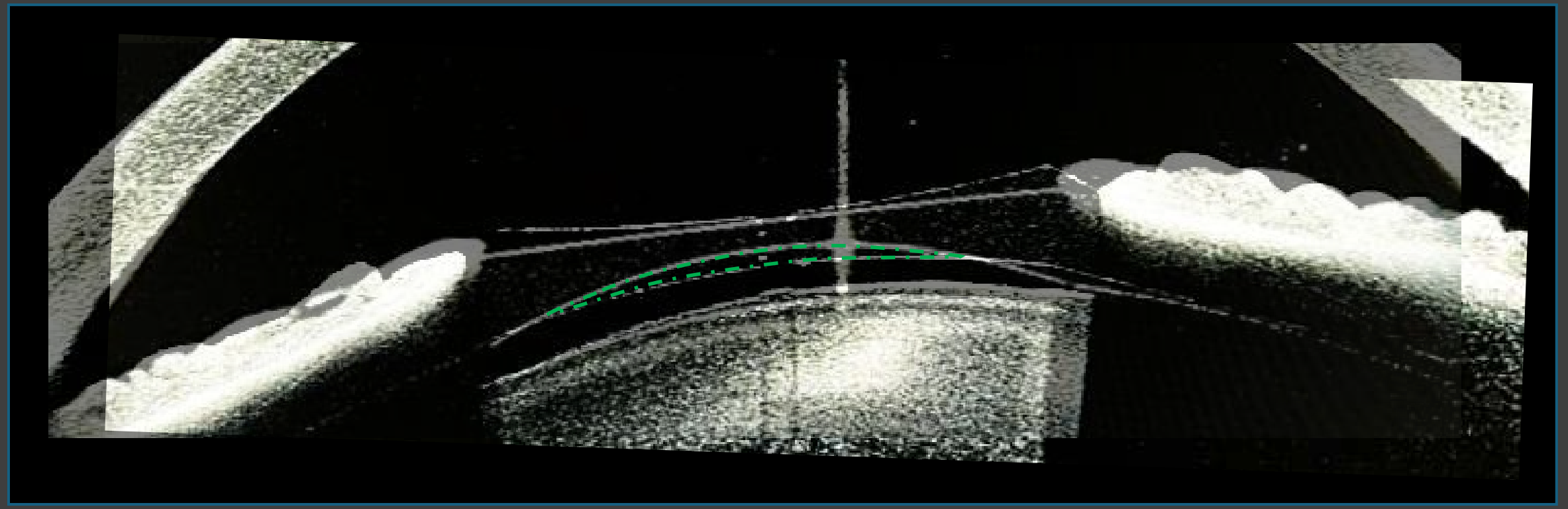
Coef. Correl: 0,637
R^2: 0,406

Advance memory material



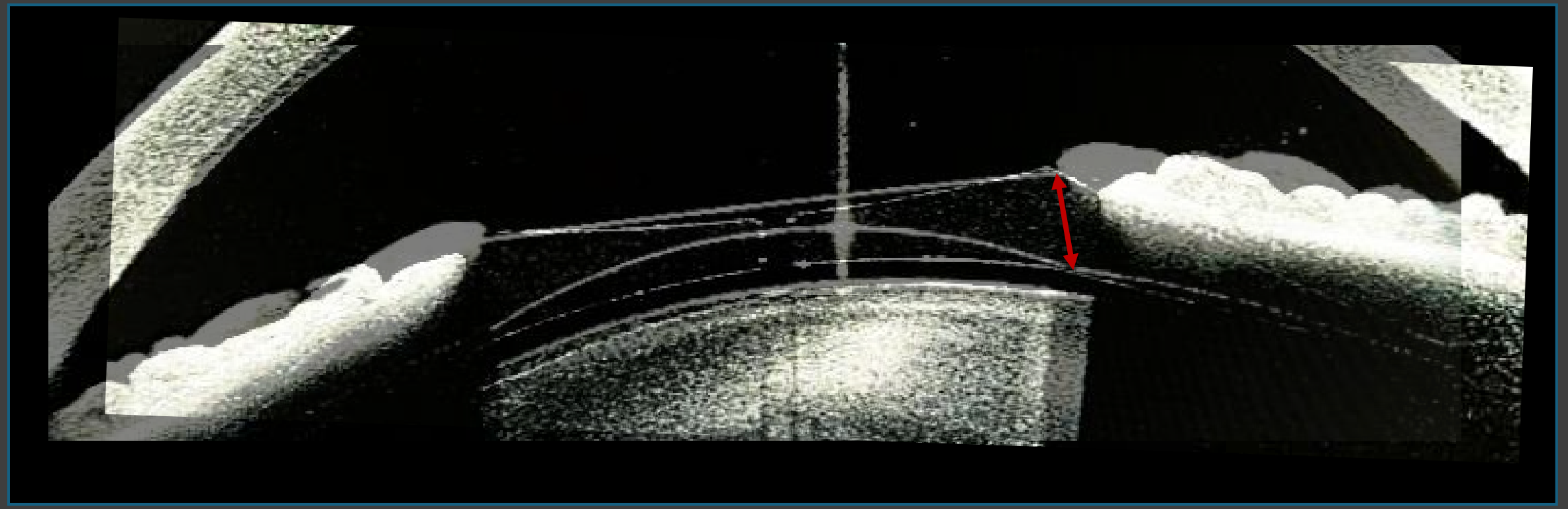


Advance memory material



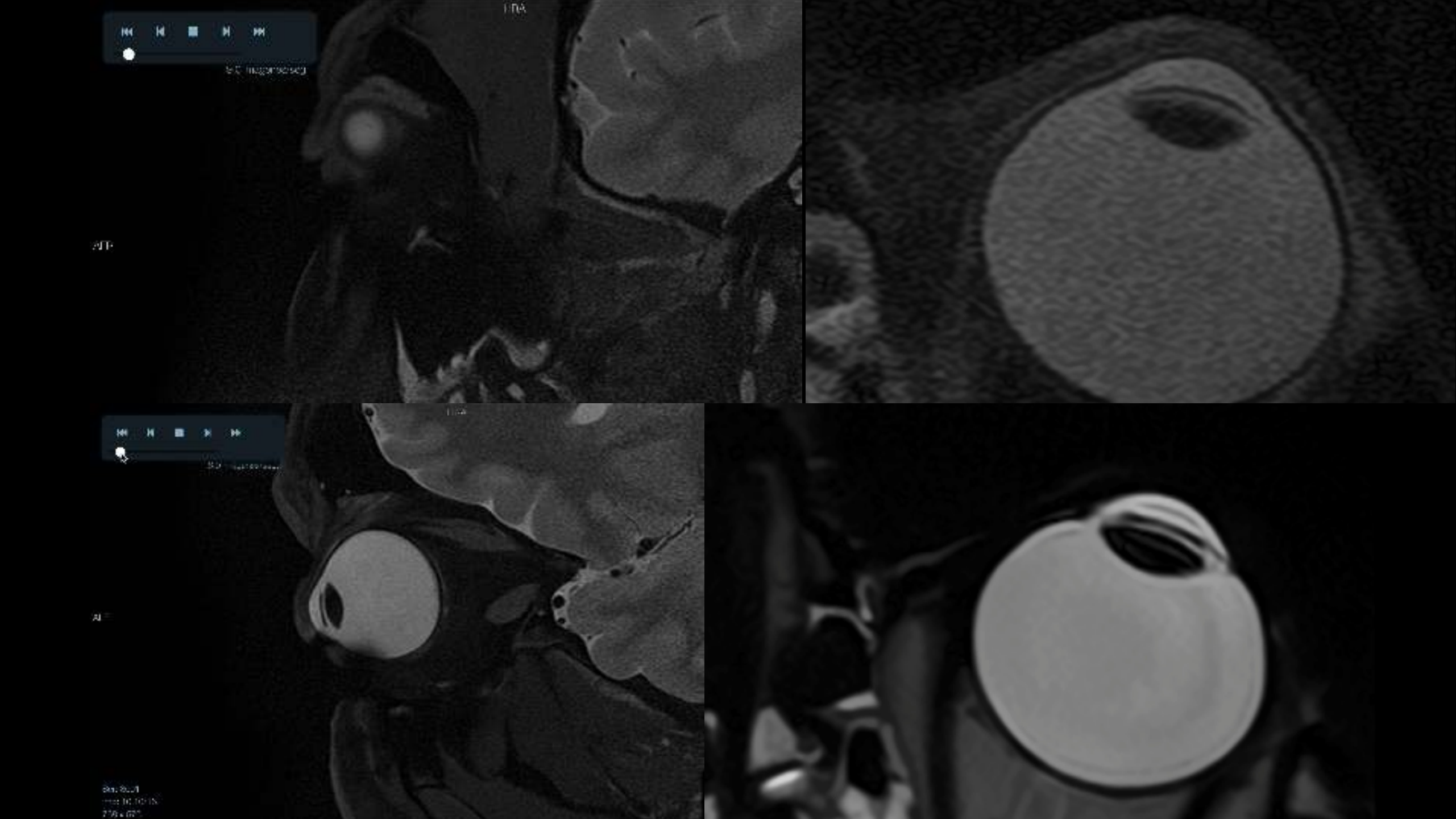
Optimized architecture

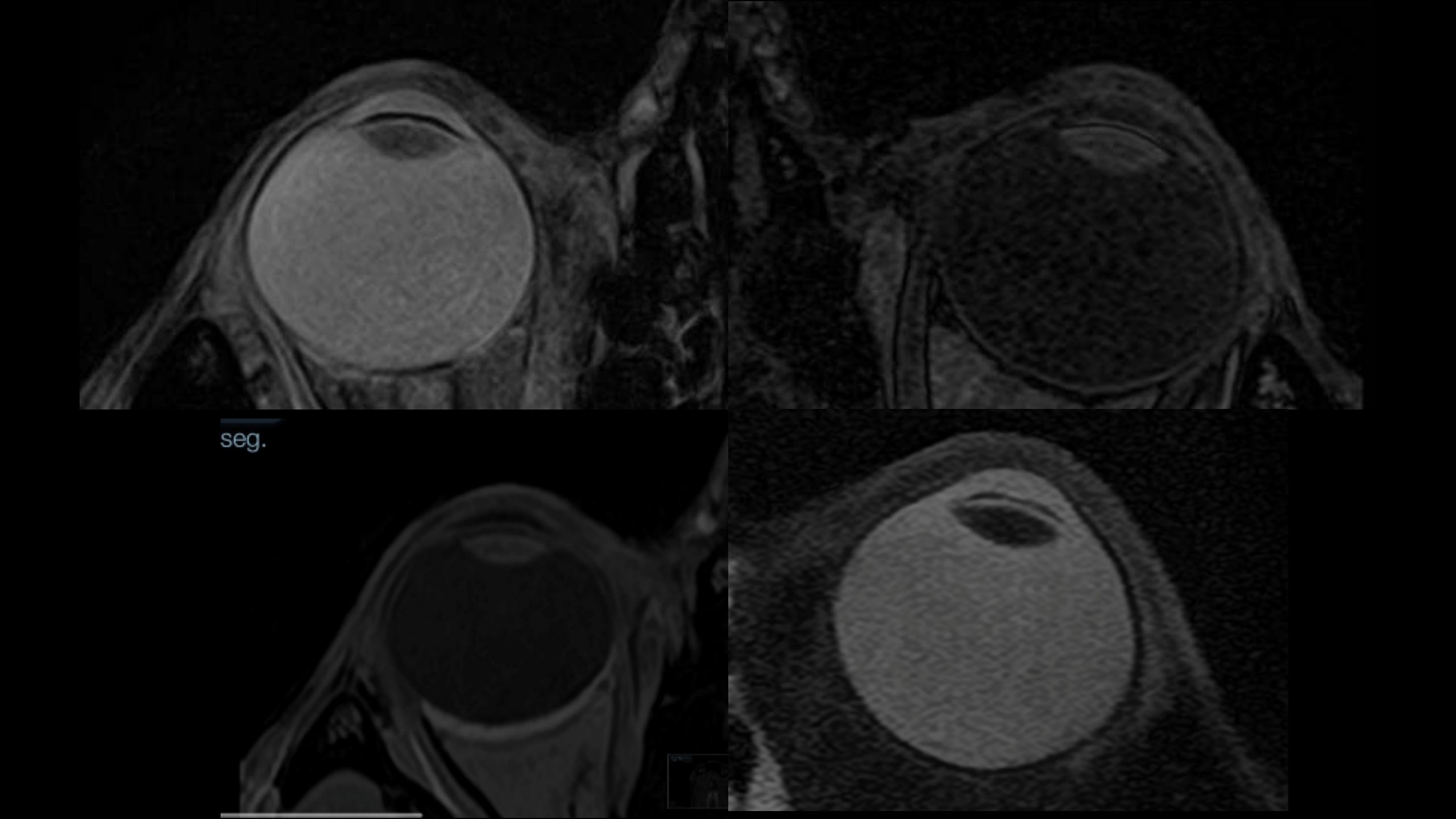
Advance memory material



Optimized architecture

Other paths that we are exploring




seg.

Conclusions

The STS with the Quantel platform shows an effective performance, especially integrated into the calculator algorithm as an additional width measurement.

Biotech's BETA calculator with vault prediction shows a Top 2 correlation with OCT and Top 5 with STS in comparison with other published formulas. This result should be consolidated with a larger sample.

The deviations applied to the eye width measurements show a very exact adjustent individually.

- The accuracy of the calculator increases exponentially when 5 measurements are used simultaneously, instead of a single measurement, even though this is the most reproducible in individual comparison.

Conclusions

The first adjustment they have made for our equipment, has resulted in a percentage of patients of 67% ±100 microns, at the level of the most respected formulas in the sector.

The CASIA 2 has shown significantly better vault prediction than the MS39, perhaps due to the higher resolution at the angles

- The Biotech Advance Memory Material, coupled with the Optimized Architecture, seem to be the keys to the stability of the lens and the reduction of the dynamic vault.

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