

Vault prediction algorithm with OCT and UBM platforms

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UVIC





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)

Preop clinical data

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)



STS





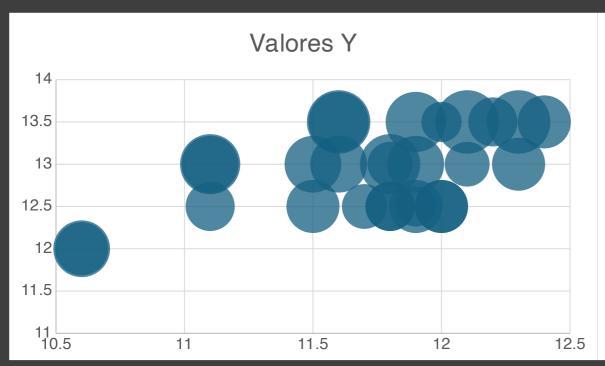


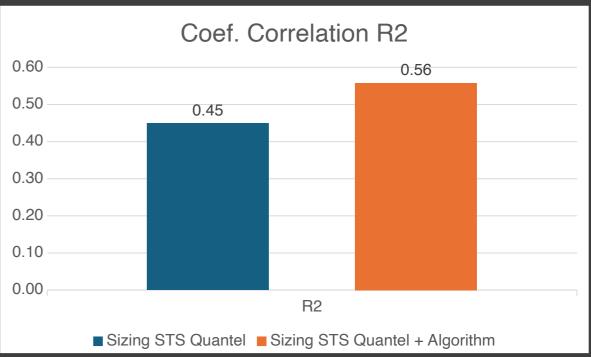




WTW

UBM findings



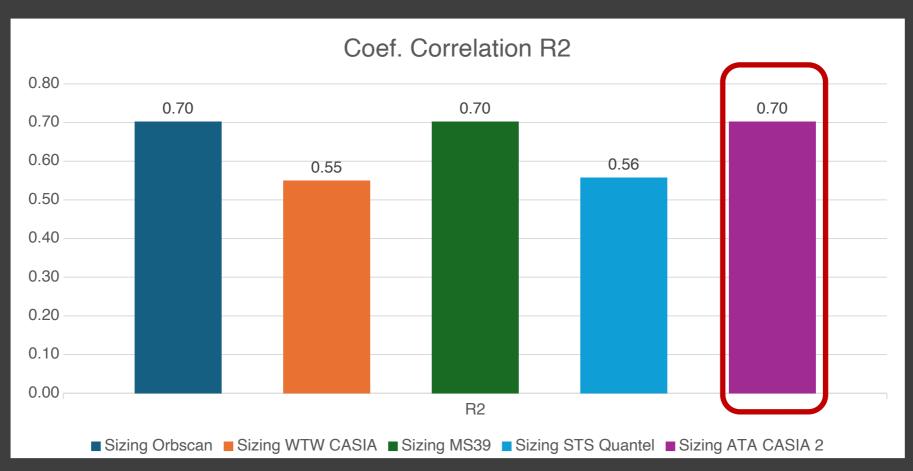


R2 Correlation all formulas

Autor	Instrumentos	Nºde ajos	Flemult	Rf
Lienancee- Mator tangeral 2007(14)	TWO	S.	K3 (temphol = 6,004 + 3,409-(0199) + 0,00005010 (week)	-
Dougherty et al., 201 (45)	984		CL (fertiafic) = 6,759 - 0.462 (SISS) = 3075 (week) + 0,757 (Ct. percents)	100
Rogers, et al., 2000 (46)	SMU	47	(C_(writer) - 3.75 + 0.46 (\$15) + 0.93 20.5 1.25 (C.II) reside decide 5 (\$1)	0.83
Tee #16 200 (26	DM:	778	Saltr = -299(310 493(310) 21 terrefor-000(1) 309 (63-00) (1. salte) 430(33) (color) + 20,40 (fm)	0,77
Zhang st a 206 (17)	BMU + Crows	78	Pa_(< 785 ± 0.0 7 (Naa CA) = 0.05 (car-stars obtains) − 0.200 (eTNO	038
Nekampiere, at 2018 (19)	Case 2 (007-50)	ůt.	CL (an ait openion 1955) = 4,20 ± 0,70 (/04) ± 0,000 (CL kinedida quada 4.3)	058
1 (44 ft 8) 2018 (2)	(01) SA)	23.	$\label{eq:constraints} Solve = -0.789 + 0.021 (SCD) + 0.032 (DE) + 0.077 (-A).$	ои
Igerodiset wil. 2019 (191)	(Cott-SA)	990	Morh = 55ys + 5500,9 (3.1. fame *5-APA)	94
Note: 2 a.e. al. 2020 (40)	Coac 2 (CC1-EA)	8	(SuA) 6,575 - 0.688 (ETE) - 0.888 (CL Principles Cuside ETE)	C-60.
Transportal (2020/(2)	(OCT SN)	30)	Aut (R.2) 48304 (SR2) (RP) 037 (CLE not do disde 679 2036 (CLES 482 (clas)) (seef (2.5) - Vest (R2) 26302 (seef (2.7) - Vest (R2) (CR2)	034
Desenced. 2020 (4);	+ Perfeculti + Designation	8	Mater - 3, 99 + 126 (ML toronto) is (FF; 407 (FF) + 233,047 F) is (CLP) models about AFG; +23 (LP) 126 (30) + 30(n) is W (FC) model; -2 (402)	056
Karryana.di 2021(90)	Coar2 (CCT S/s)	745	salge so artificia	
Kangeral 202 (5)	Costs 2 (CCT Sh)	227.6	melonina artiko di Muuri beroasi sekultus	8
Anno 4 . 207(02)	SMIL KOLMARASMO	153	Vaul = -065(06 - 657(1) (1.1. artis*of-450408 (515*) -107457 (515 - 51515 (5154)	054
9icn ct./r. 2021 (53)	BNU4Pirtour HCDMade:ACC	6297	Orley, Countification and Countification of the second for many for example and the second for the second fo	0.32
Igaconiretal, 2070(M)	Case 2 (CCTR04)		Val.102 = (656 + 650.9 (tars/1001, 685)) US 10ar(17.5 + 80.5 - 600)\$ (tarsato 71 + 476) (sac 13.2 & 13.7 - [96.5 + 660.9 (tarsato 71 + 670)) 13	
Yangietal 2022 (34)	QEM - CCT SA KOLMARENSOD	н	Productives and West, WTA, ACA receipt to report for reads in a (refresh productive)	
7hang (1.4) 2022 (58)	9No	e:	www.ZZZW.nc.w	7
Chenierial 2028 (96)	Postupan + Postupan + Secu	(94)	Tellophicantical Foliatoruscu (Sed Commeyor Chevanical STS / STSs, WTW //CD Kin	950

Autor	Instrumentos	N.º de ojos	Fórmula	R ^o
Cui et al., 2023 (57)	BMU + Peritacam + 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	KL (talia) = 5,18 - 0,0189 (CRD) + 0,4019 (WTW) + 0,2478 (ATA) + 0,182 (CLR medida desde ATA)	67
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 (tala) = 5,472 - 0,458 (AQD) + 0,474 (ATA) + 0,767 (EC)	0,34
Rocamora et al., 2023 (60)	IOLMaster700 + MS39	115	www.id.emmetropia.be	
Russo et al., 2023 (61)	MS39 (OCT-SA)	561	Inteligencia artificial	0,68
Wu et al., 2023 (62)	BMU+ Casia 2 + Sinus		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 tameño) + 175,5 (ACD) - 161,2 ATA - 203,7 (WTW) - 190,4 (LT)	0,43
Yang et al., 2023 (14)	VGZDOd (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
Dietal 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

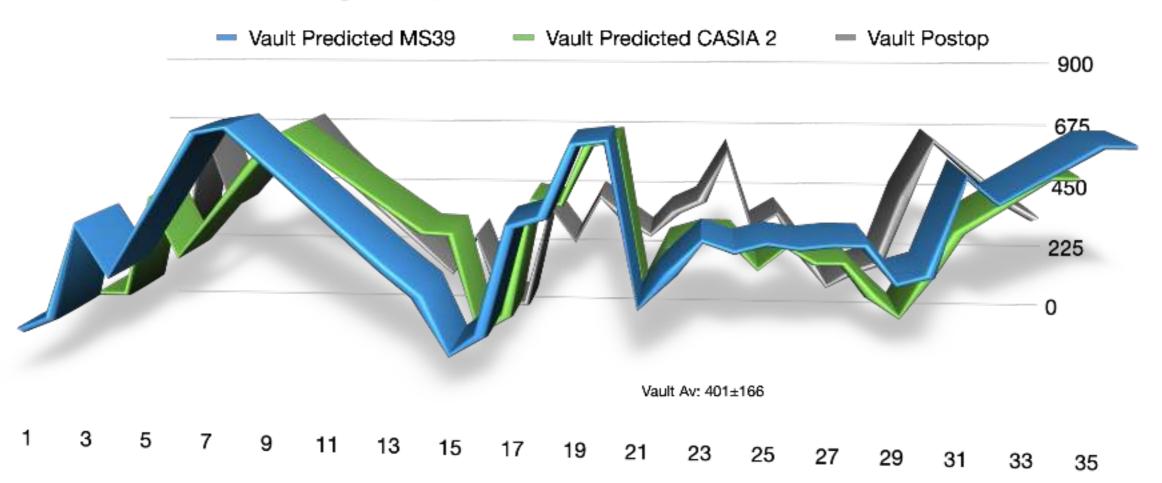


Correlation between measurements and the perfect size

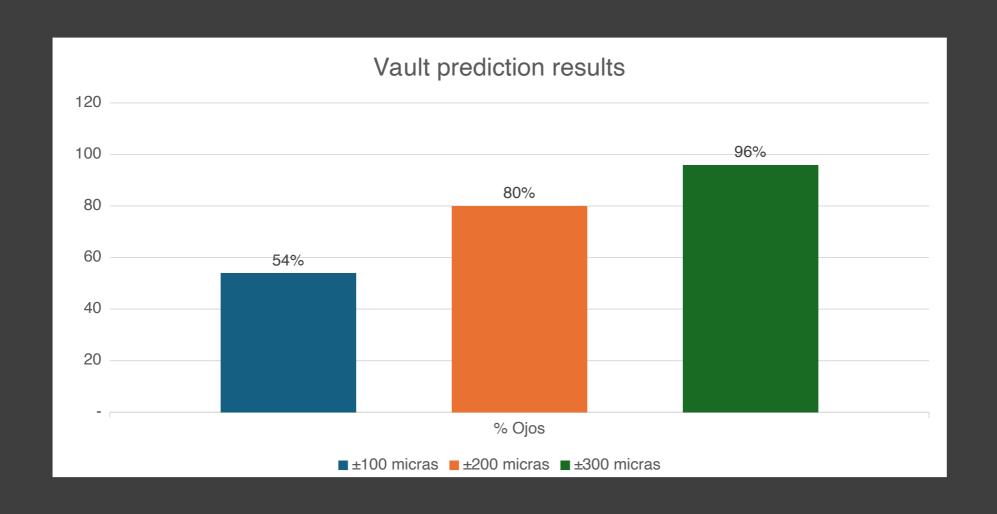


Biotech calculator nomogram for Eyecryl Phakic: MS39/CASIA 2

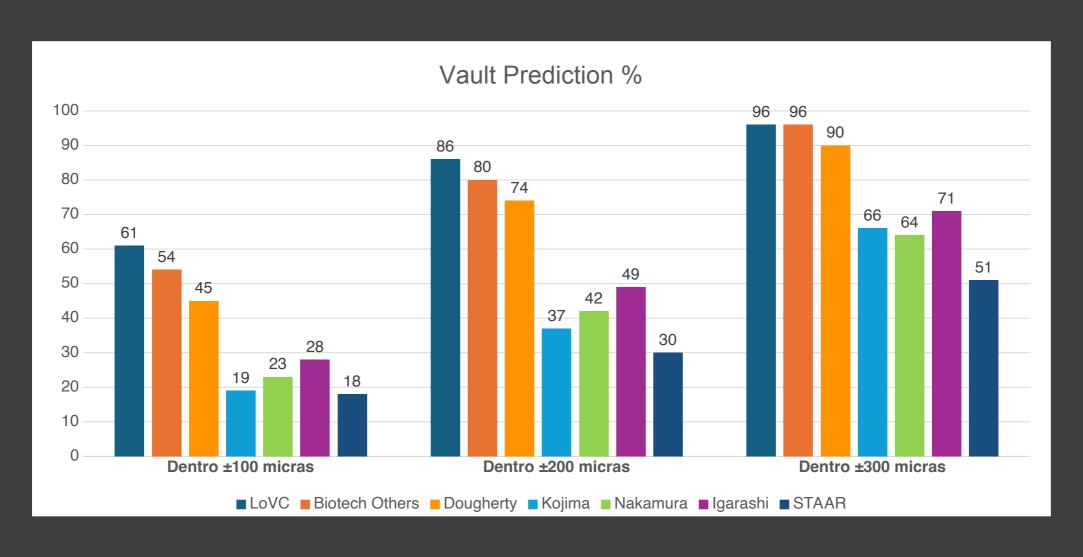
*Data from Centro de Oftalmología Barraquer



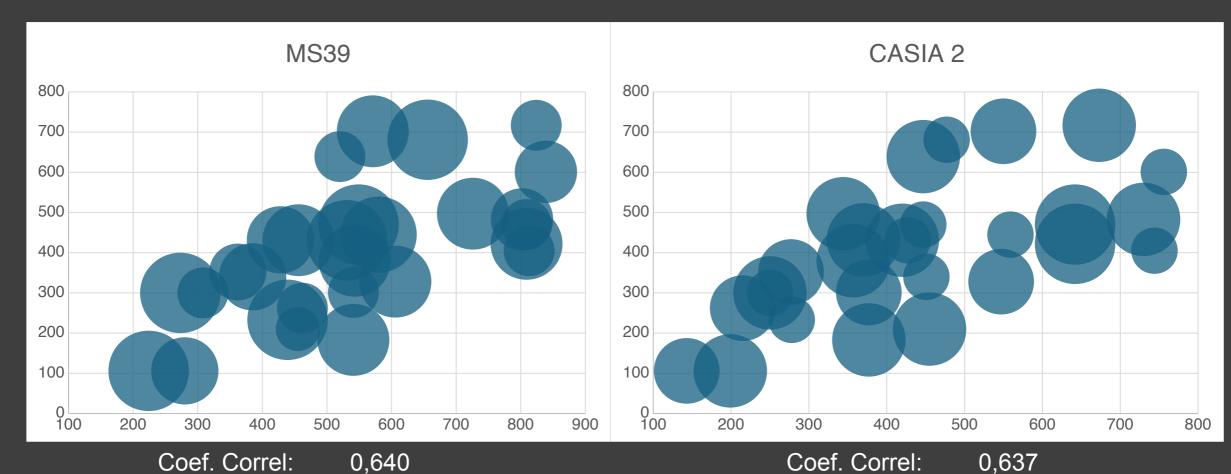
Vault prediction capability



Vault prediction capability



Vault prediction capability (Automatic CLR)



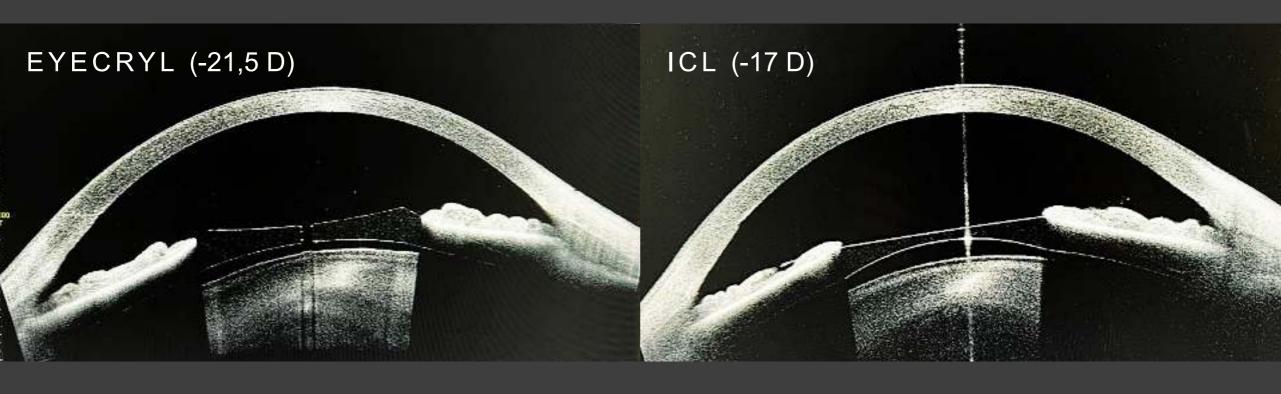
0,410

R²:

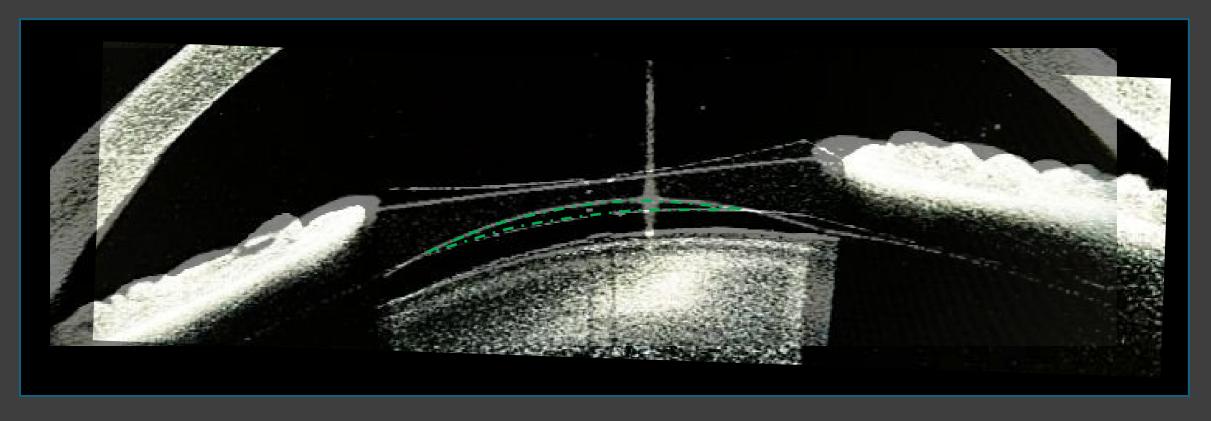
0,406

 R^2 :

Advance memory material

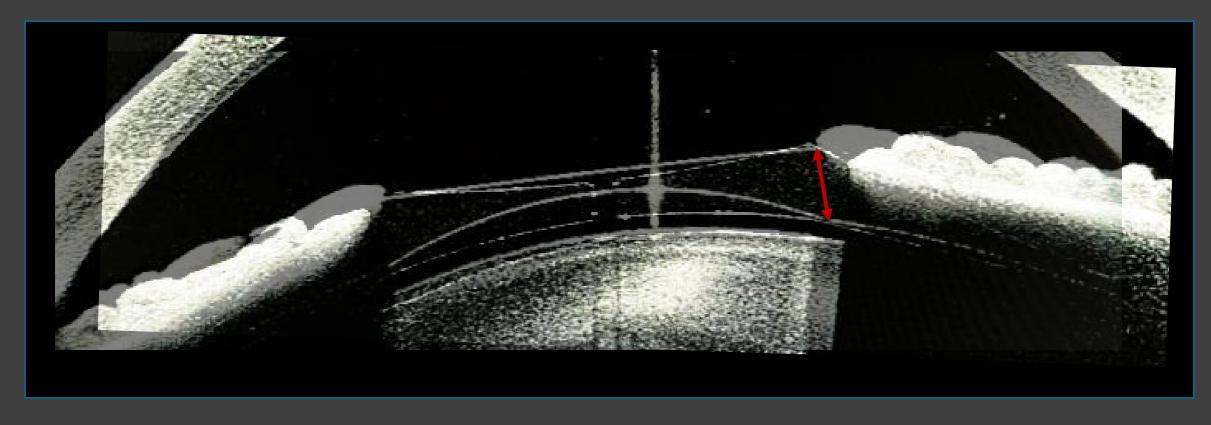


Advance memory material



Optimized architecture

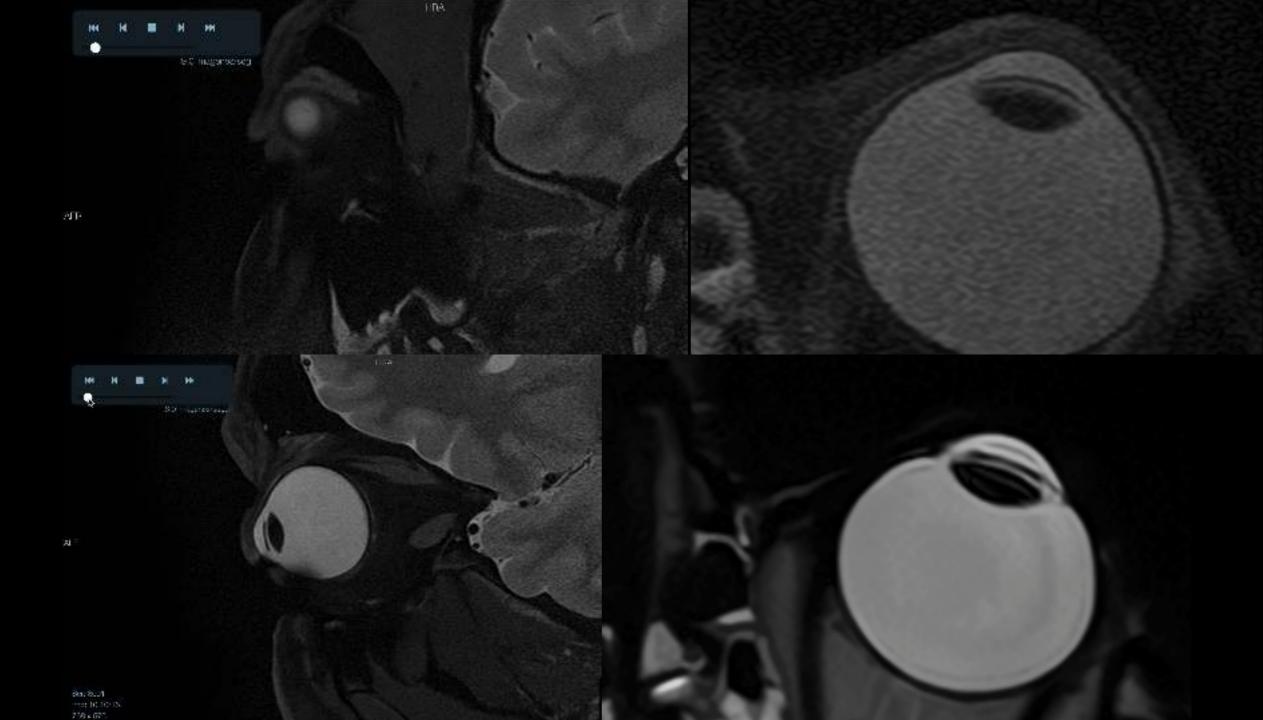
Advance memory material

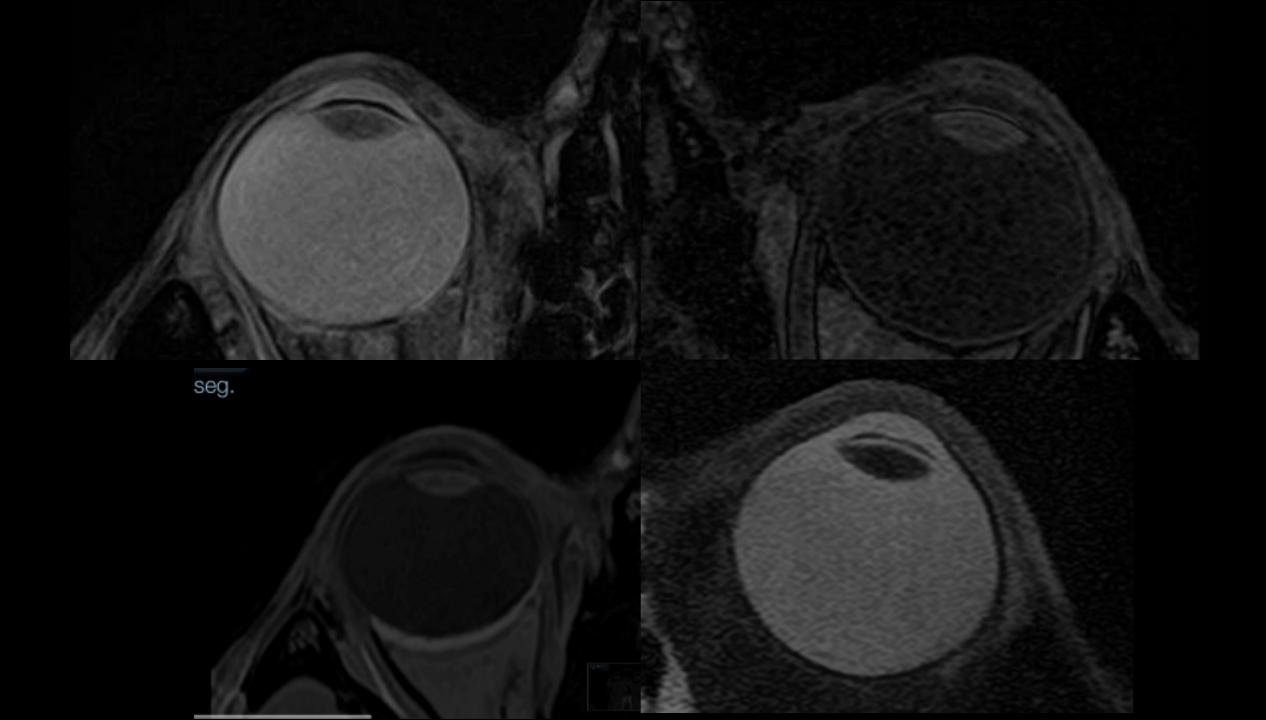


Optimized architecture

Other paths that we are exploring







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.

