First detections concerning the use of DIGITAL MARKETS VERION system on dealing with astigmatism during phacoemulsification.

P. Bournas A. Pissarakis D. Kanellas, K.Pavlakis, P. Minakakis, Thr. Pashalidis

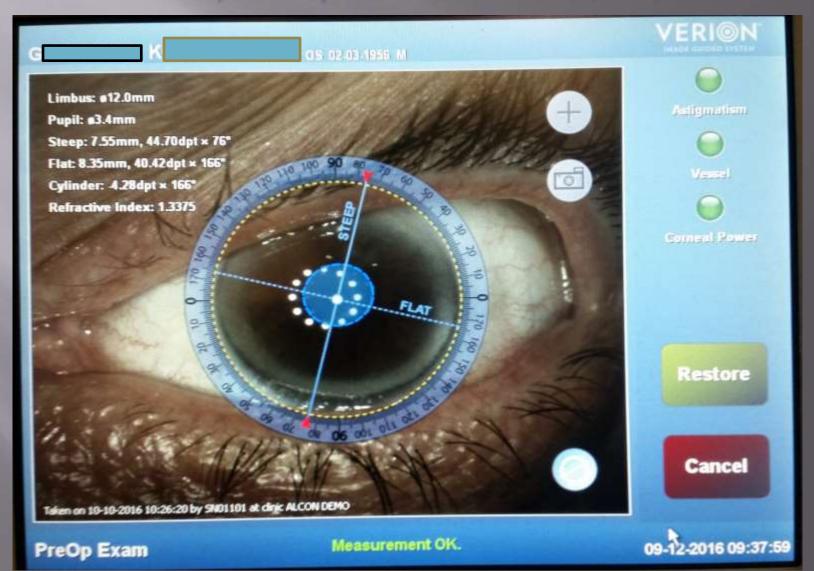
General National Hospital Piraeus Greece

2017



The authors state no Conflicts of interest with any products mentioned in this report.

VERION computer-assisted surgery system (ALCON) is a new system of multiple abilities and applications. One of those is the safe and accurate placement of the toric Intra Ocular Lenses. Our study is based on this particular ability. A respective system is the CALLISTO (Zeiss).



Before the introduction of Verion system we were placing toric IOLs by the following procedure: Survey and data's collection from the IOL master, sending them to our collaborator firm, along with some other data (surgeon's position, incision size (2.4 or 2.75mm), pursued correction etc). After data's processing, they sent us the proper lens and specify the insertion axis (e.x 164°).

	1/01/133/				1/01/1937				
OD light	Axial length and keratometry (dual mode)	OStett	Heidig	Holladay 1	Holladay 2	Hottera			SPare CID
Eye status		Eye status	0	Dight					OS
KER	Print graph Remarks	KER R1 800mm	*	mo	Surgeon NIKAIA	*	Target refraction	4	22.64 mm
	Phakic	x 164" R2: 7.36 mm x 74"	ACER ACE	m				KER ACD	8.00 7.36 mm 2.75 mm
		K -3.67 D @ 164*	IOL[D]	REF[D]				10(26); 95 5 1	REF(D)
ALM		ALM 22,67 mm			Alcon Toric SN6A	(T(2-9)		25.0 345	-0.4
		22.47 mm 22.66 mm 22.68 mm			Zeiss CTLUCIA	501 P/PY	•	25.5 25.0 245	45 -16 -42
		72.63 mm			Medicontur Bi-Flex	x 677 (hydroph	il acryl) 📩	235 23.0 225	-07 -03 10
	and the second second	22.64 mm.			Xcelens IDEA (HE	MA26%)	•	25.5 25.0	-15
		SARSI V	12		Colculate	Save	Cancel		A LOOK
		3 0 ^E	120			ŝ	-		× 0

On the surgery's day we mark the insertion axis using the op toric marker.



Now with the use of the new system, the patient, after his IOL master measurements, is been examined to Verion where all of the data are recorded in detail. The lens and the insertion axis are defined (surgery plan).

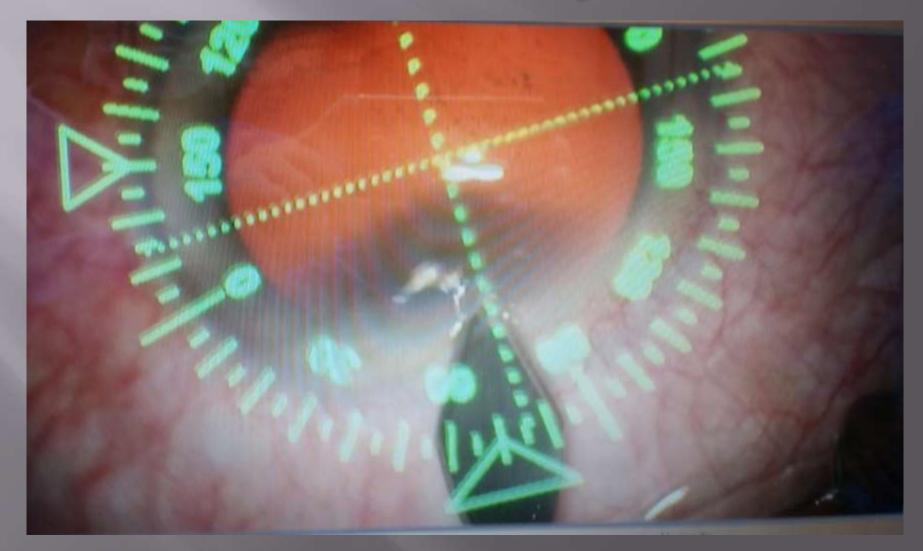
LEFT	: 201020016 B+	Dete: 10/15/2016 🔆*
STEPSE BRUERAS, PARALIOTES RECEDINE 18/10/2016		Surgeon SCLENKS, FANAGLISTS + Tech: antonis pesanoks +
Ref: VTX 12,00 Target Rat 0,00 RCVA RCVA ACCED 22,63	e and Target Rehaction	Calculation Type and Target Refraction
FUEX: 48.42 0 366 Step:K: 44.78 0 76 Artige: 4.28 0 366	D. (Cataract Removal) (PC lens: 🖲 n Salous	🖲 Standard IDL (Cataract Renoval) 🛛 PC ierac 🖗 m.Bag 🕧 m.Soktan
a from Active Lens Latt (Deally God Phone)	dators + Oanee	Other Calculations -> Clot Hime
518: 0.50 0 Brinchan 70 0 sect 100 0 - Sect 0 -	art: Effocal ICO. Power Calc.	Target SEQ Reft - 0.50 Bifucil JOL Power Calc.
Set STA Flat A 40.46 0167* Threp II. 44.46 077* Autom: 3.79 077* INTN: + - + ALD'S Obtemation Research And -	rdian	Pre exating condition
ND: ND: Deph. Date:	Las Prevens Prix, All, Lask Prevens Rit	El Keratuconas El Prevenas Prit, Alk, Lank El Prevenas Pik
Formate SHE	Vitroux Cavity Side al Sodie Sobie Pathology	Steral Budle Other Patrology
Allow UnitAlly	d Ks and Humanis WTW	Reflaction and Ks and Horeontal WTW
M Provident DAI Phace MIDP ADarticult. 110 Jack	D X VTtr 12.00 mm Pennare Join only	Ref: 0 X VD: 12.00 mm Manuta Kan arte
The KLIND MORE	UCHA: I HO WHITE-D-WHITE:	and the second se
22.5% 0.12	Index 1227	BCVA: • UCVA: • Hix white-to-white: 12.038
23,85 0,50		Keratoneter Index: 1.1155 -
24.004	CL: 0 K2: 0 Cyt 0.00	€ dot K1:40.40 € 100 K2 44.70 € 76 Cyt. 4.20
Lew Res. Alter.	10 10 10	Cm 21 1.33 20 10 41 2.33 (0) N
) 22 11 11 196475 45.71D x7*	strat messared with the privacy keratometer 1	Kanat measured with the primary kerature the []
275 Mach77 40.67.0 × 72*		Avail Langth (wn)
000 (070" 101 (077) (0404010 +0.55 (0 ×77)) (040471 +0.55 (0 ×77)	4 kal Length to Use for Calculations:	August: Avial Length to Use for Calculations
Secrete Auto TP Control 10, 570 + 557 deal faceby: 5.470 6800	United (US	AL(Optical) 25.630 # Optical (00)
terf/resdul 00: - 0.54 + 0.150 x77*		E street part of the street of
and?set@rfats.46.46.0167* Step 1: 44.46.077* Amps: 3.75.077*	CD Phatelans Troc	Antenox Segtent (mo) Phalic A(2) Phalic Lens Thick:
	CUT Practure mod	Prover Avort

All data are transferred to the digital unit of the microscope with a memory stick.

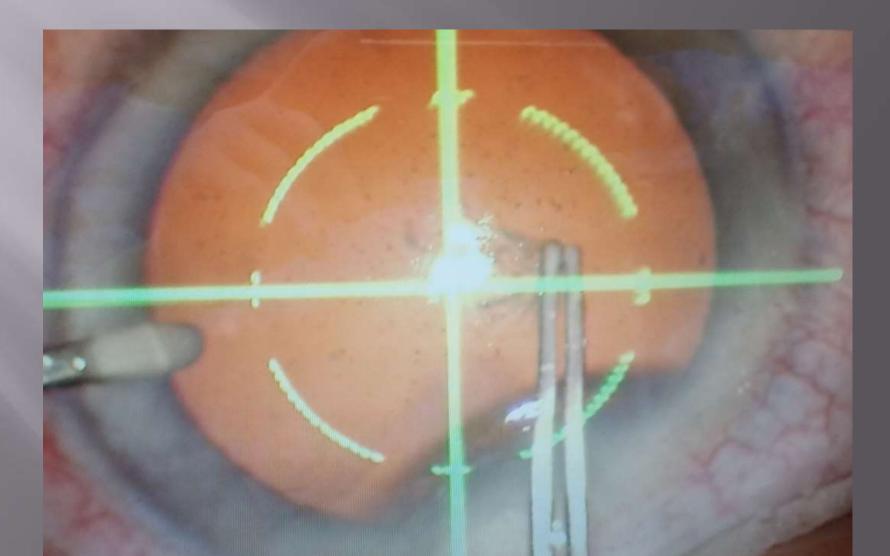


Chera, Calibridan

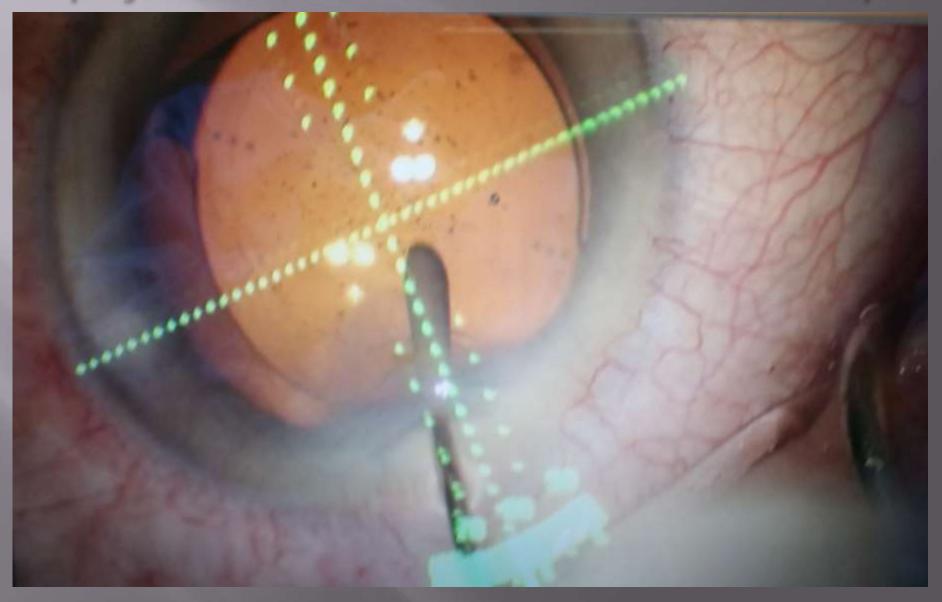
By the beginning of the operation the surgeon has in his disposal, directly on a display, the exact points of the main and side incisions, without being affected by the torsion due to the supinum position of the patient and the head's position. The exact incisions point is rather important because is related to the induced astigmatism.



Then the position and size of capsulorhexis is projected (5.5mm), with the optical axis as the center, without being affected by the head's and eye's position and the uniformity and size of mydriasis. This is very important for the tild's avoidance and centration of the lens.

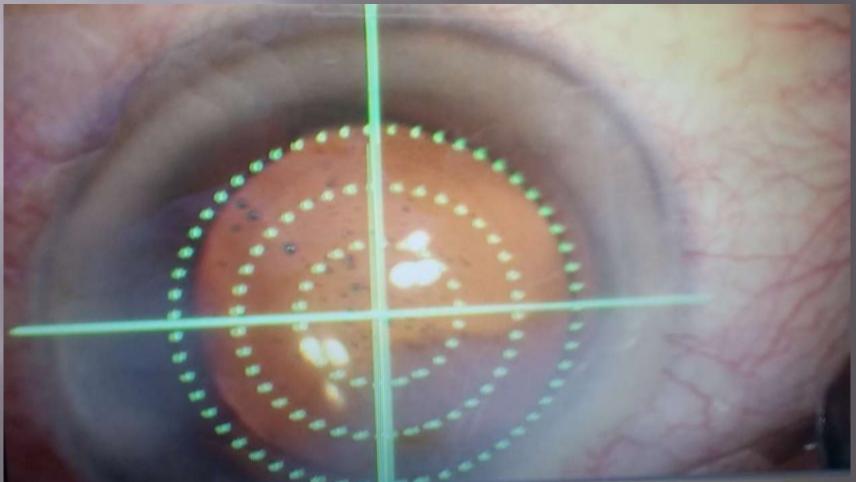


Subsequently, the toric's IOL insertion axis is projected on the cornea with absolute accuracy.



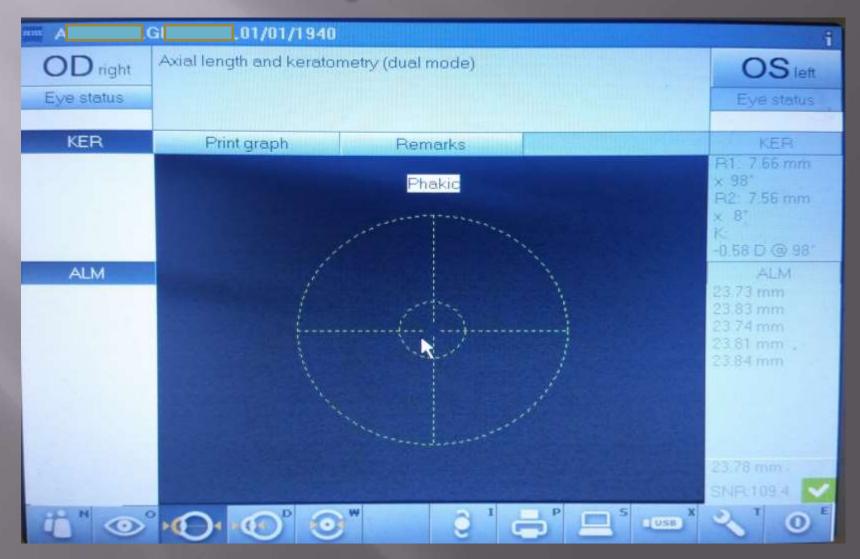
A very important, worth to mention, point. A small axis diversion might mean a great loss to the pursued correction. (For 1° axis inaccuracy, we lose 3.3% of the pursued correction.

E.x: On a patient with 3 diopters astigmatism, if we end up with 10° inaccuracy, which may happen, we 'll correct 2 and it will remain 1 diopter of astigmatism) Finally, the system gives us the ability to centrate the lens, not where we think, but where the optical axis really is without being affected by factors that we mentioned before.



The operations' number performed by the assistance of Verion system is not so great for now, so we can have a statistically important depiction of the difference between before and after Verion's usage. The results with or without Verion were very good. But if we want to exclude the luck factor or to achieve the perfect result, Verion system helps us significantly

It 's worth mentioning that by using Verion system we can decrease minor astigmatisms without implanting toric IOL, but through the main incision's adjustment and the induced astigmatism from it.



If for example on a patient with 1 diopter astigmatism, we introduce approximately 0.50 diopter of astigmatism , depending on the incision's position, the final astigmatism either will increase to 1.5 diopters or will decrease to 0.50. Verion system using the data base that we create for each surgeon, can process the patient's data and determine the exact incision's position so we can achieve the best result.

Finally and due to Verion's ability to process the pre and post operative data , we create a particular data base for each surgeon so he can continuously improves his technique. Thank you