

I have Keratoconus and need a corneal transplant. How quickly can I start to see?

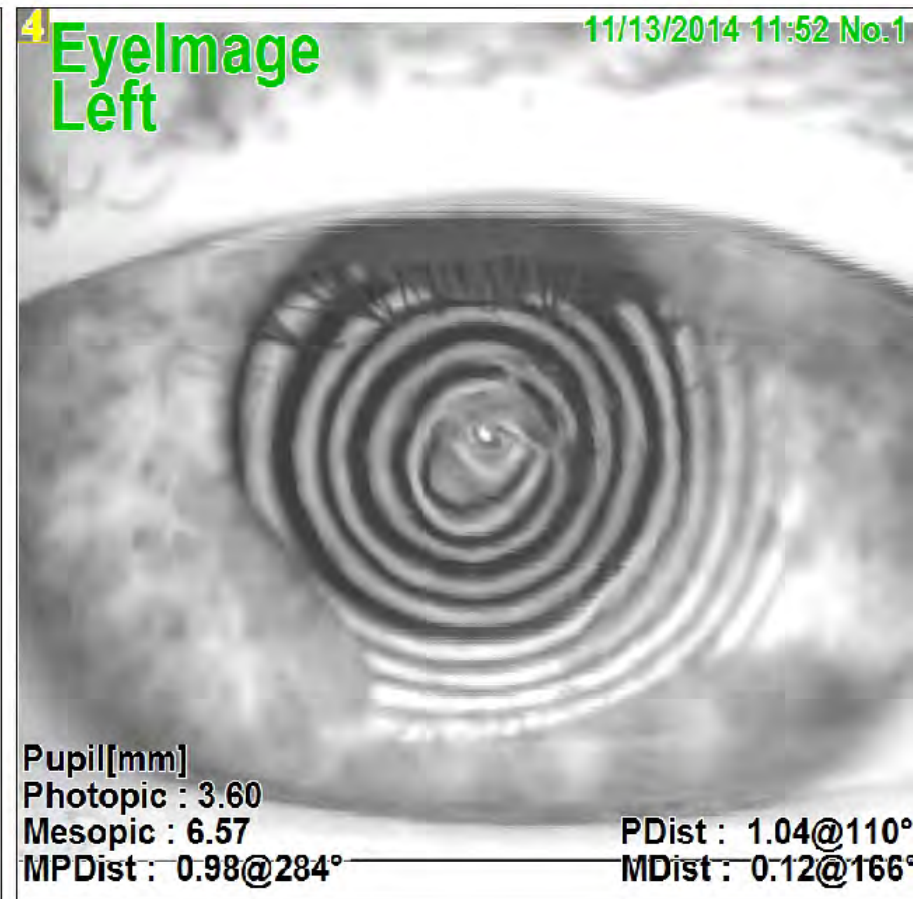
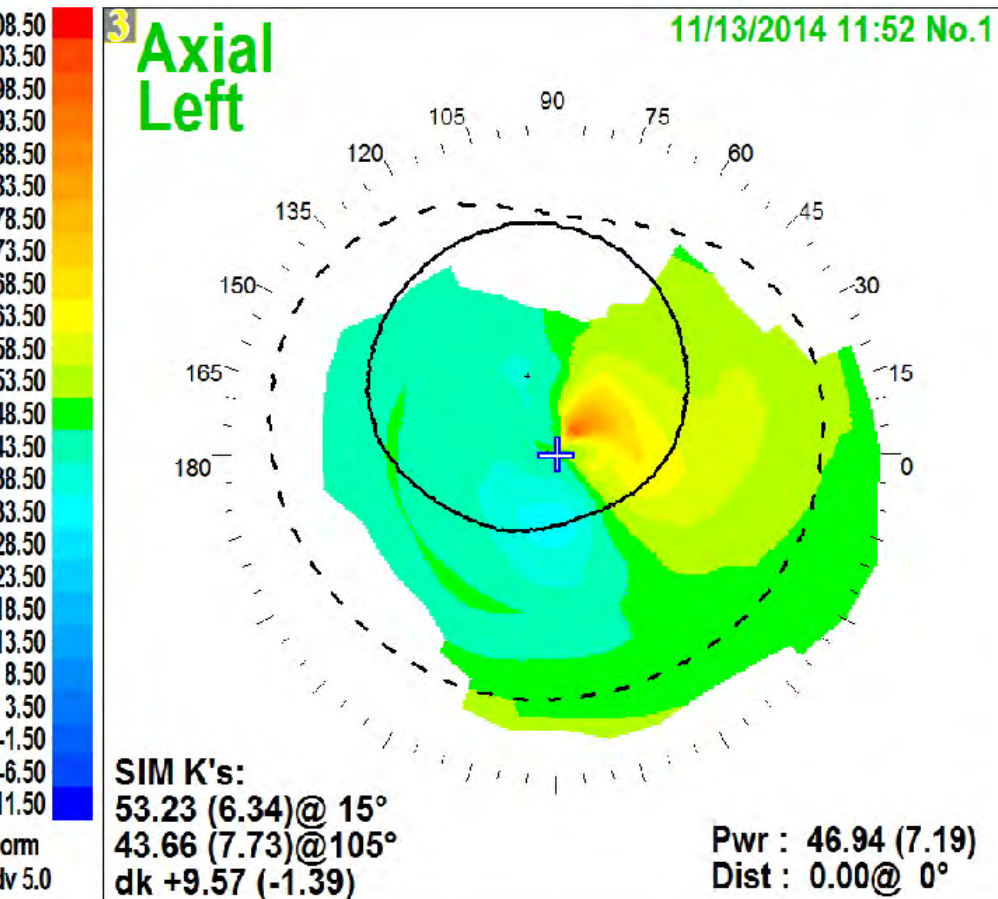
- DALK – few weeks (sometimes less!) 😊
- PK – years (maybe) 😞

Case 1: 31 yo Male lives in Cleveland

Left Eye

Left: severe keratoconus/central cornea scar VA 20/300

Right: had a Penetrating Keratoplasty (PK) done in Cleveland in 2004 – doesn't see well out of that eye.

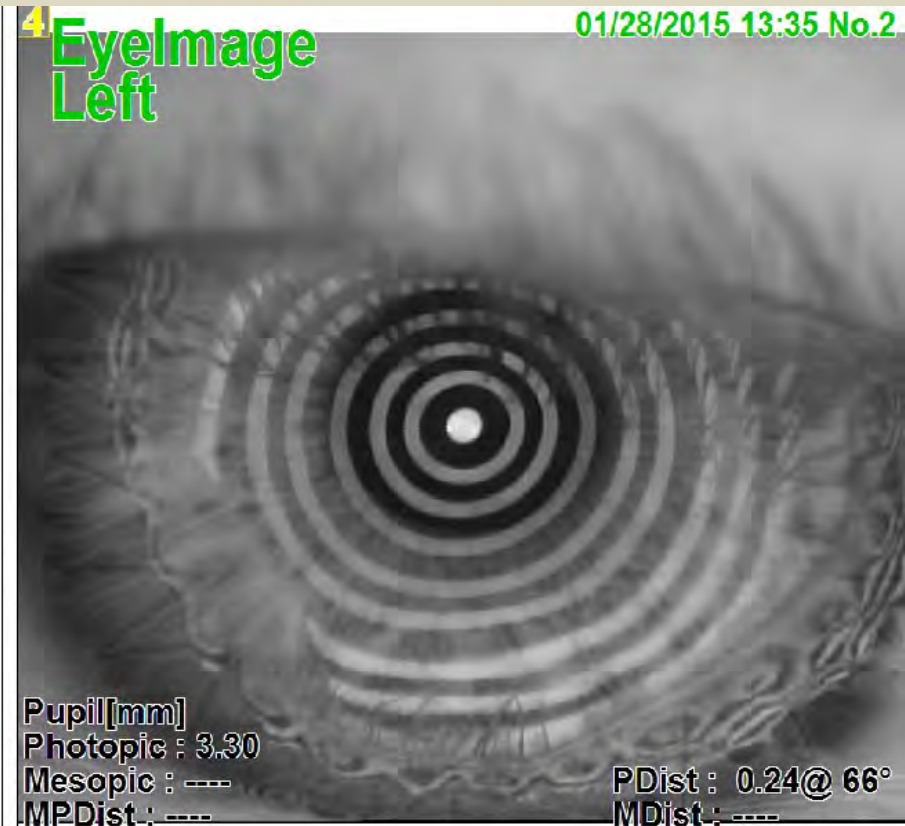
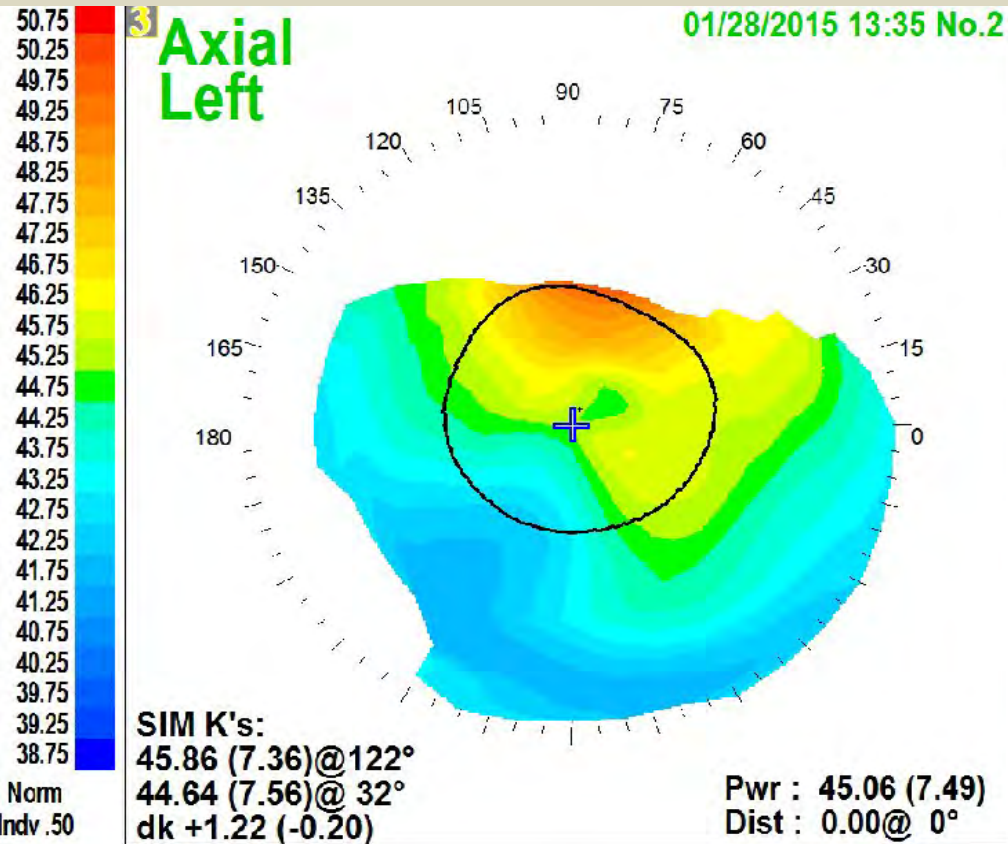


Case #1: Very Early Visual Rehabilitation

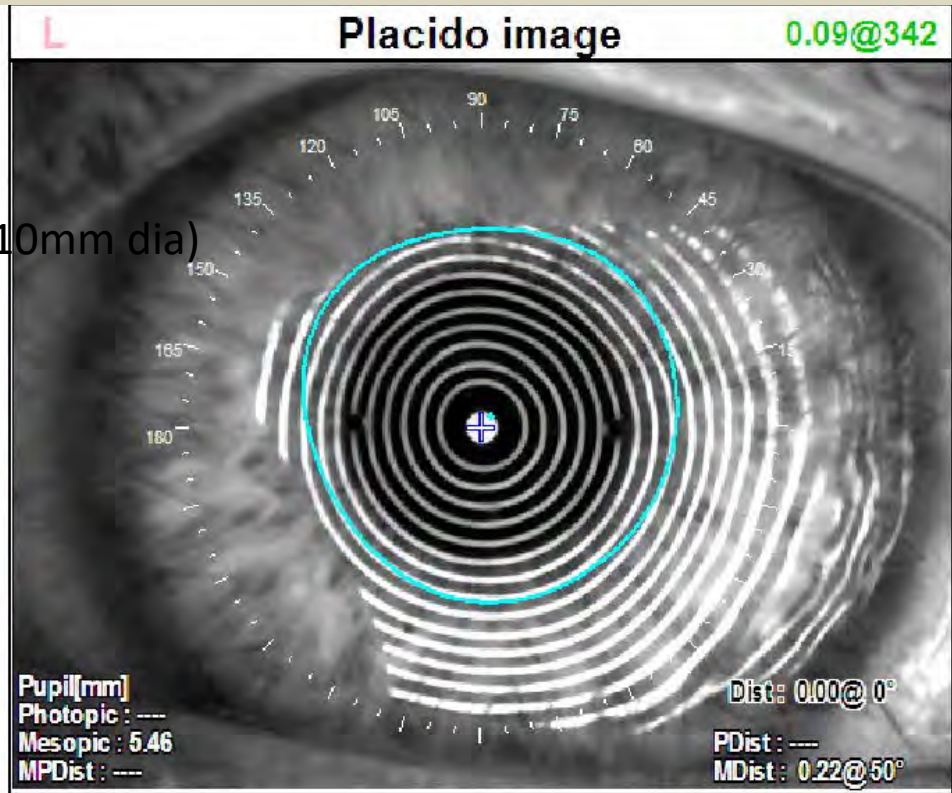
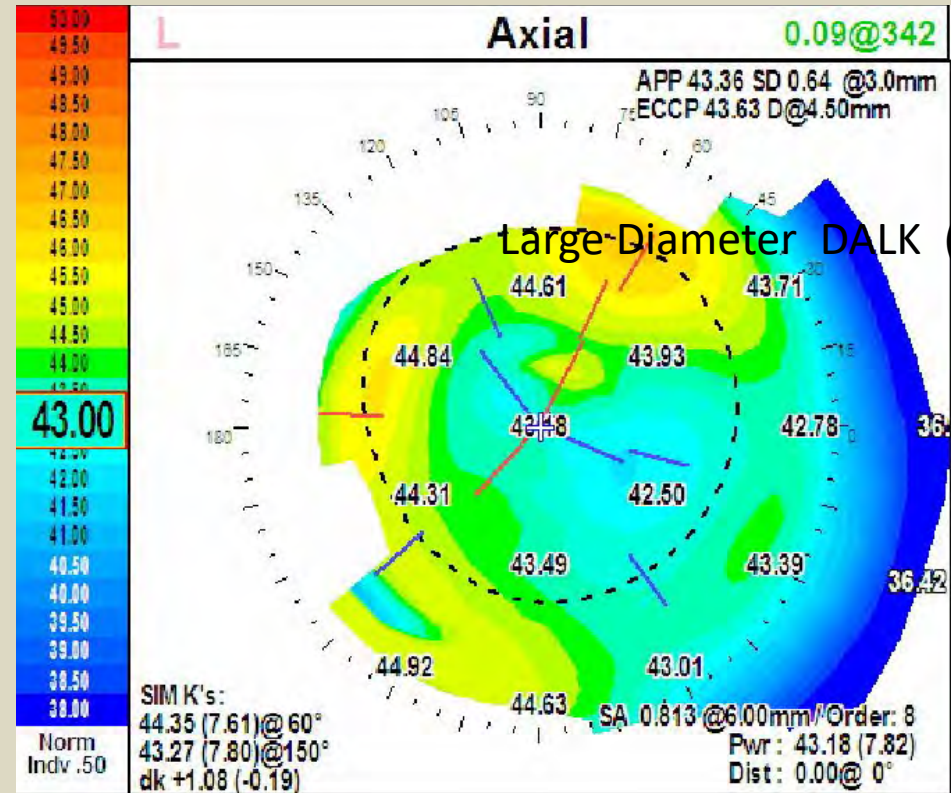
8 days post-op: -9.0 20/30

3 wks post-op: fit with -8.25 soft contact lens 20/25

Large Diameter DALK (10mm dia.)



Case #1 4 yrs post-op: -10.0 + 1.0 x 60 20/25
running suture left in place (very low astigmatism)
Large Diameter DALK (10mm dia)



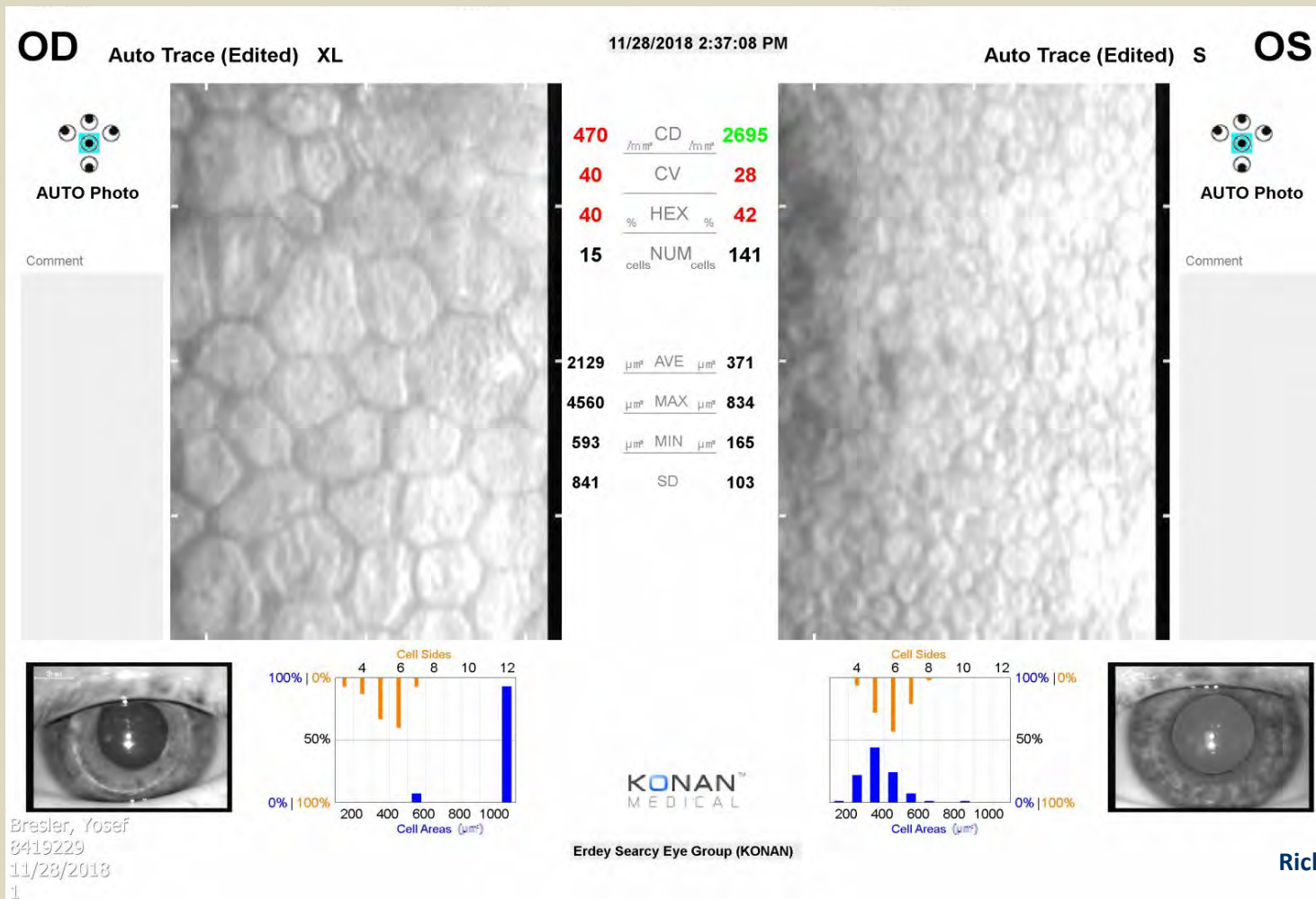
Case #1 now age 35yo

OD: PK 15 yrs ago

OS: DALK 4yrs ago

OD: low endothelial cell ct due to donor cell decay

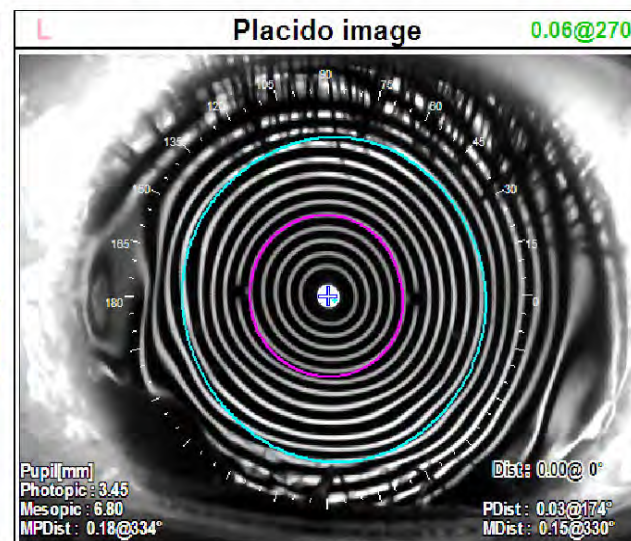
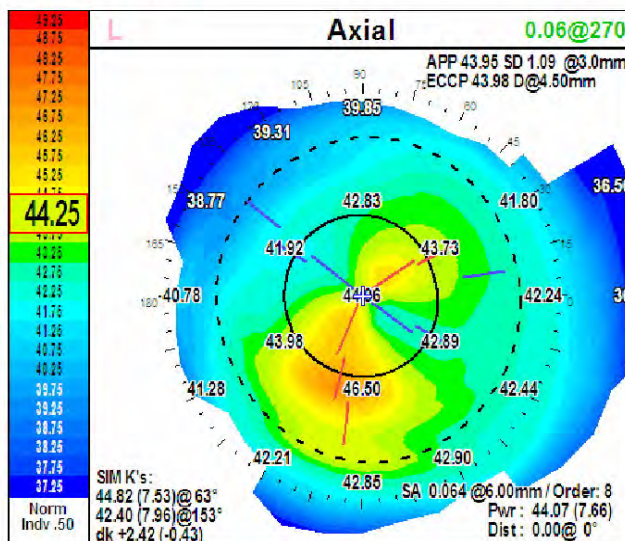
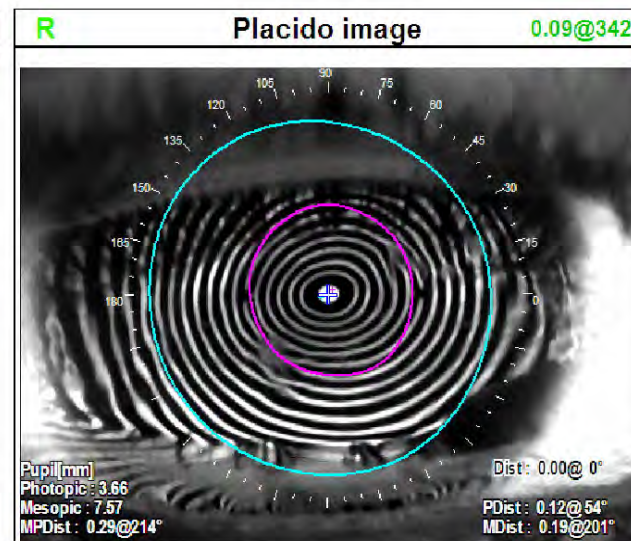
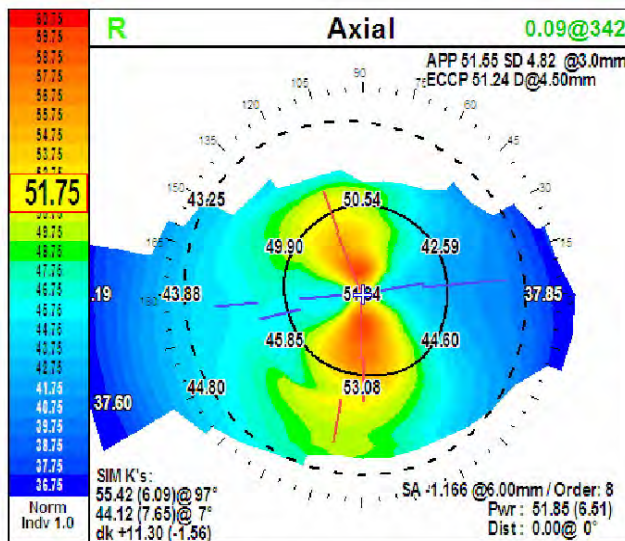
OS: normal cell count



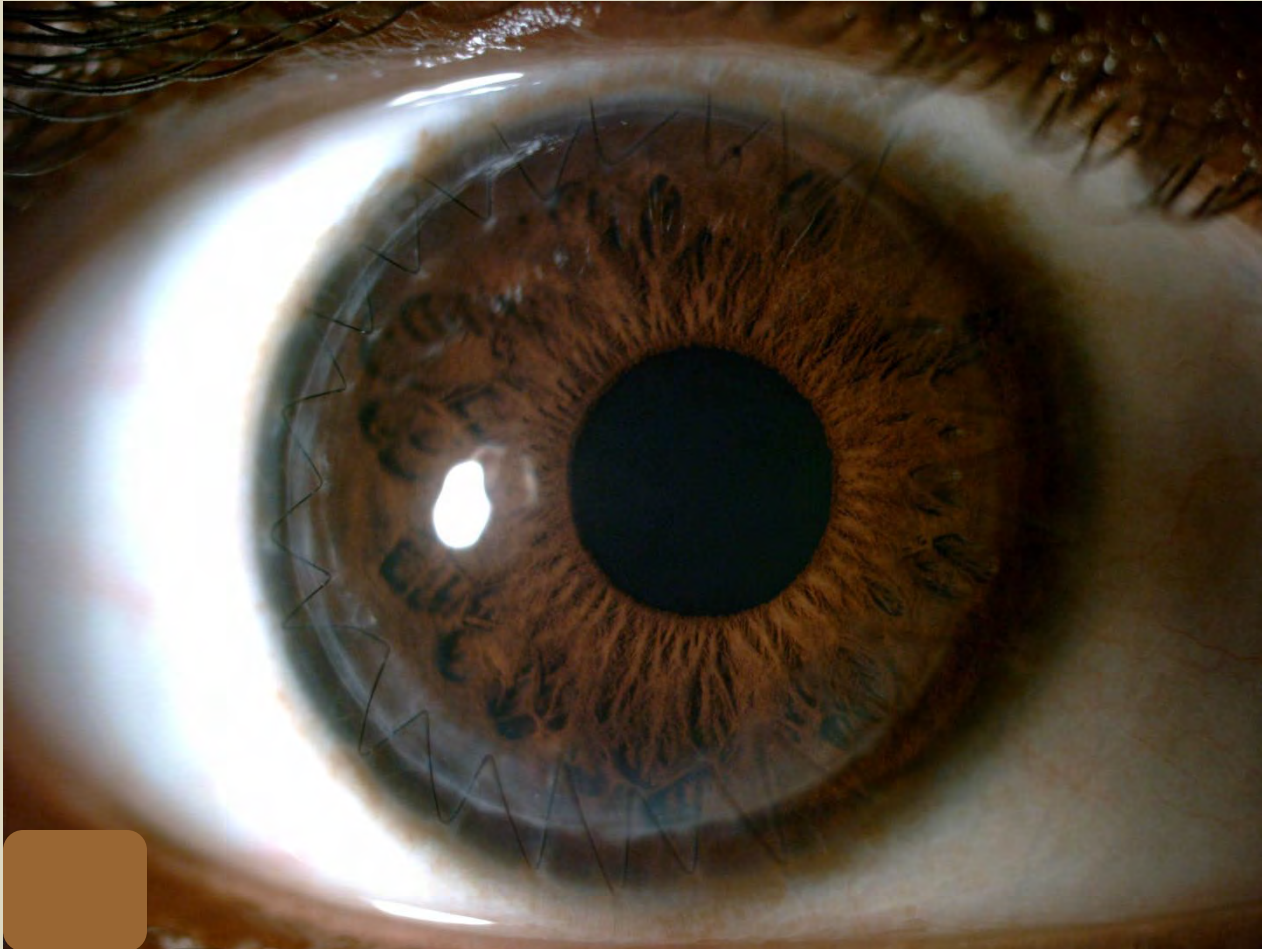
Case #2: 32yo female severe Keratoconus OD>OS RGP contact lens intolerant OD, Disabled with medical insurance “challenges”

OD: -13.50+8.0x100 20/200

OS: -2.0+2.5x57 20/30



Case #2: Oct 2018 DALK 9.5mm



Case #2: Very early visual rehabilitation:

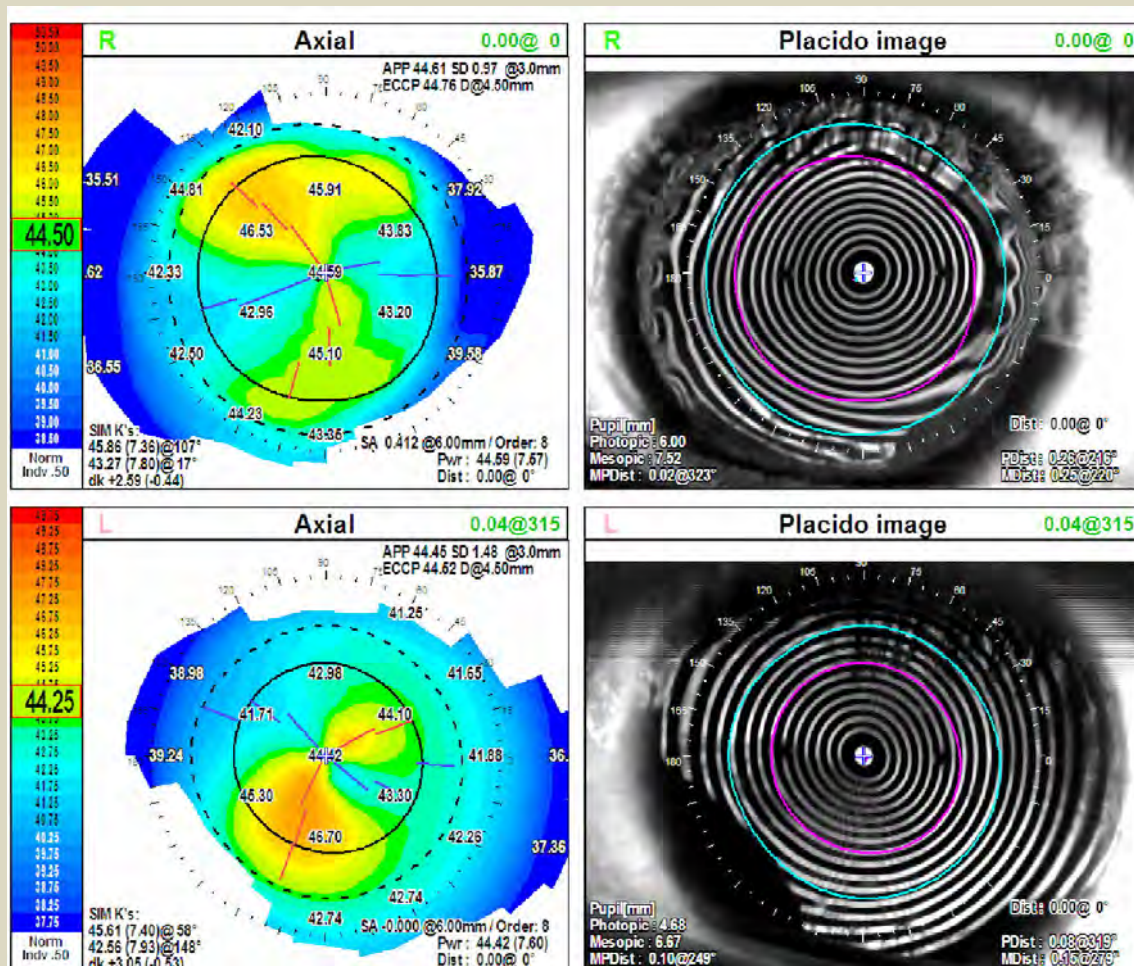
1 year post op same RX OD/OS

3 wks. post-op OD: -4.75+1.75x140 20/25 dispensed RX

OS: -2.0+2.5x57 20/30

1 wk. post op OD: -5.25+2.25x140 20/40

Oct 2018 DALK 9.5mm

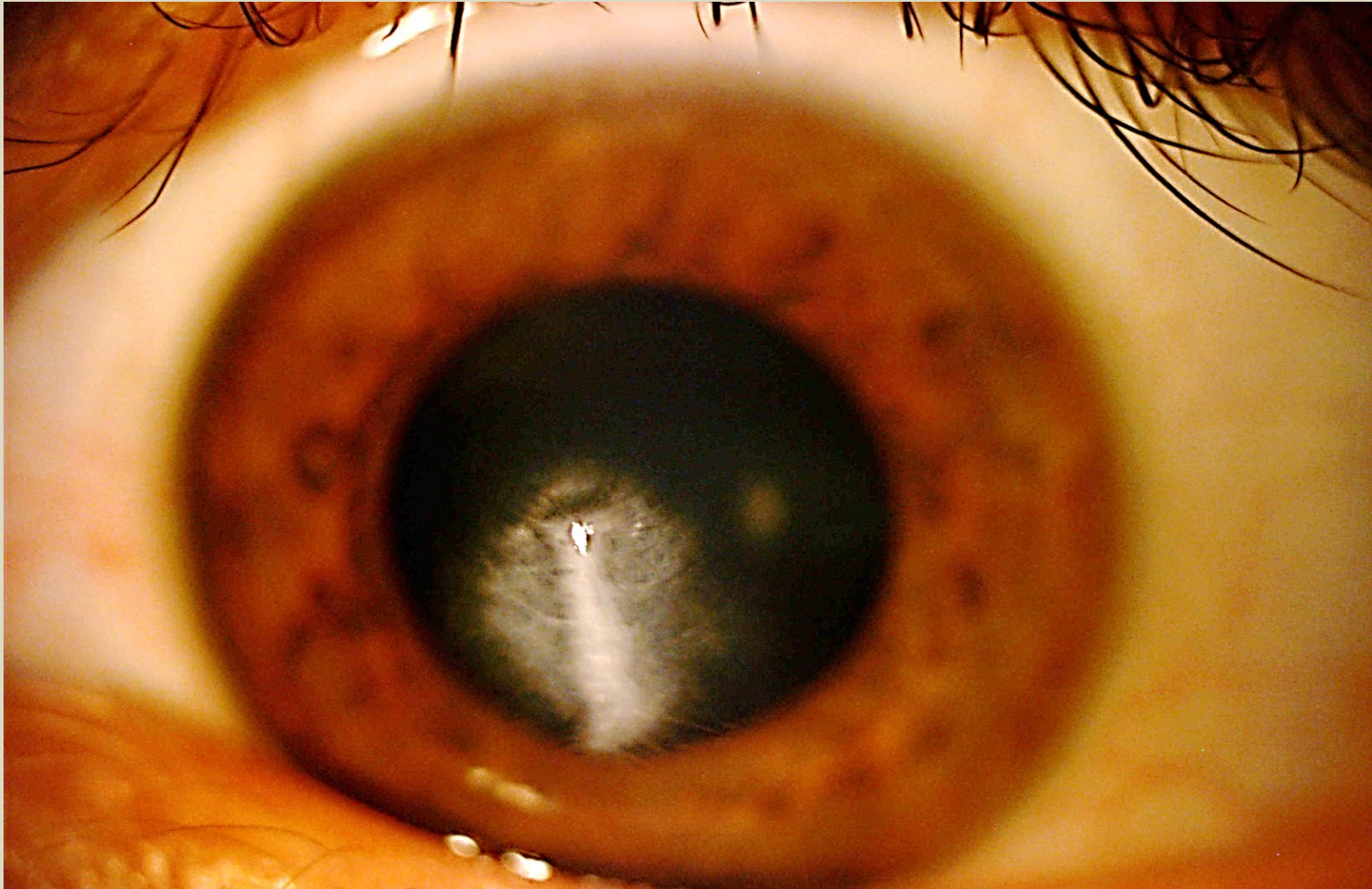




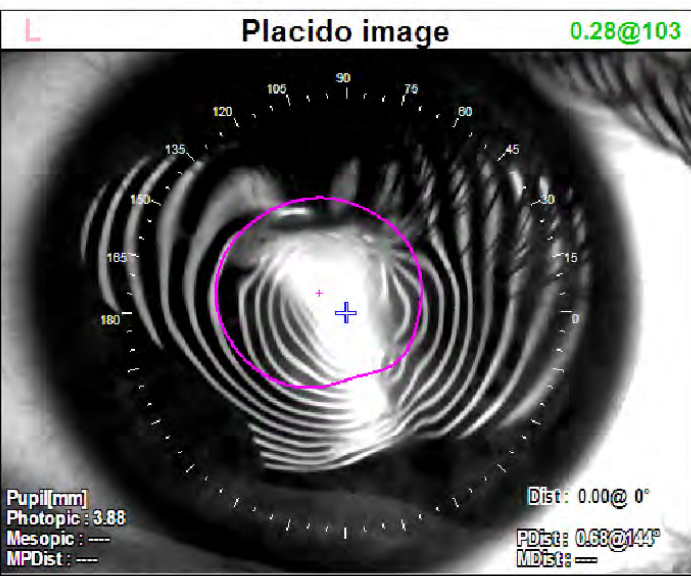
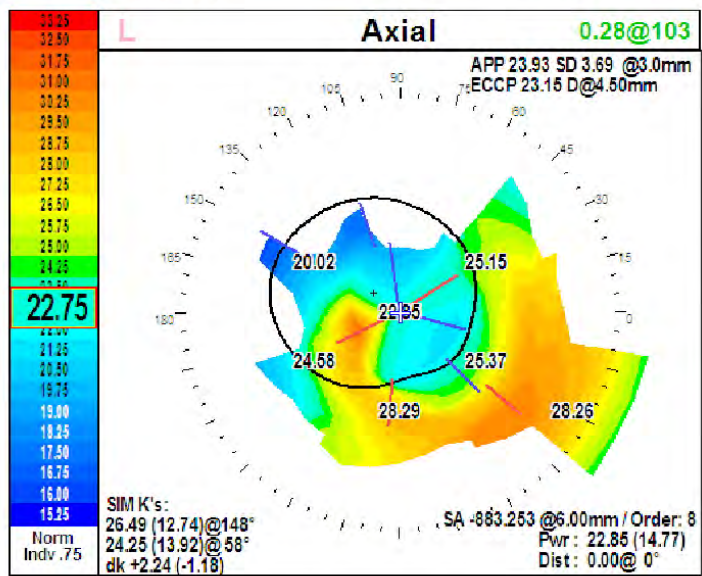
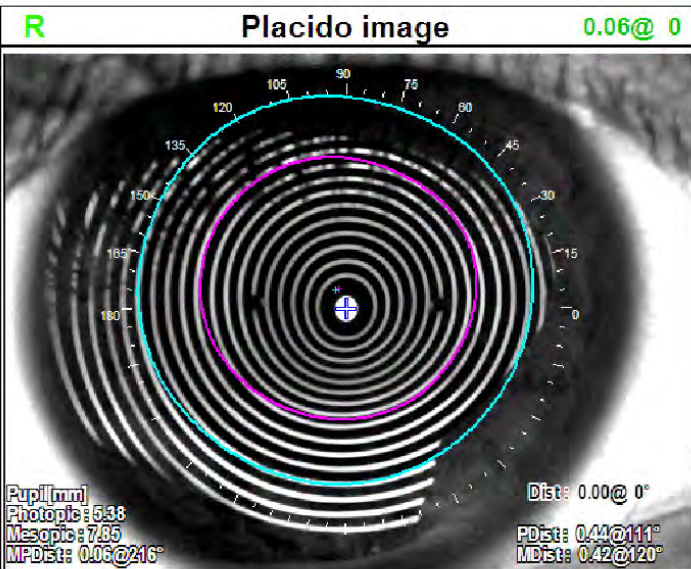
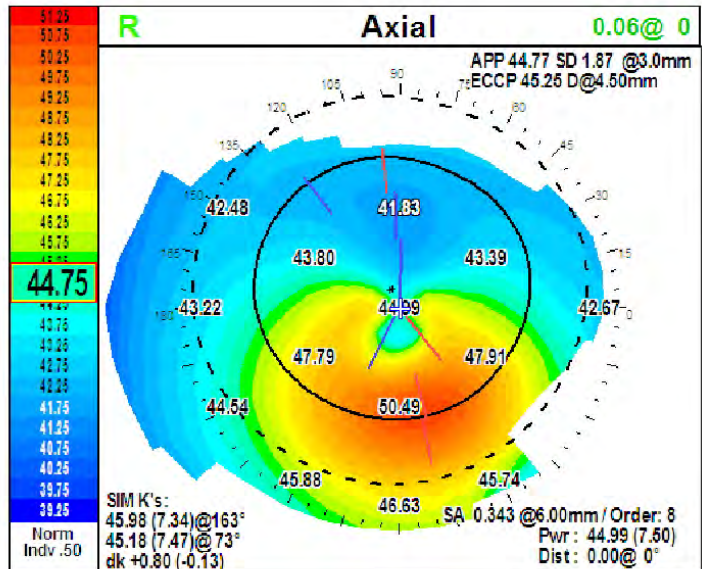
Can see much better, able to drive,
more independent, can work!!



Case #3: Left Eye: 27 yo with Severe Keratoconus



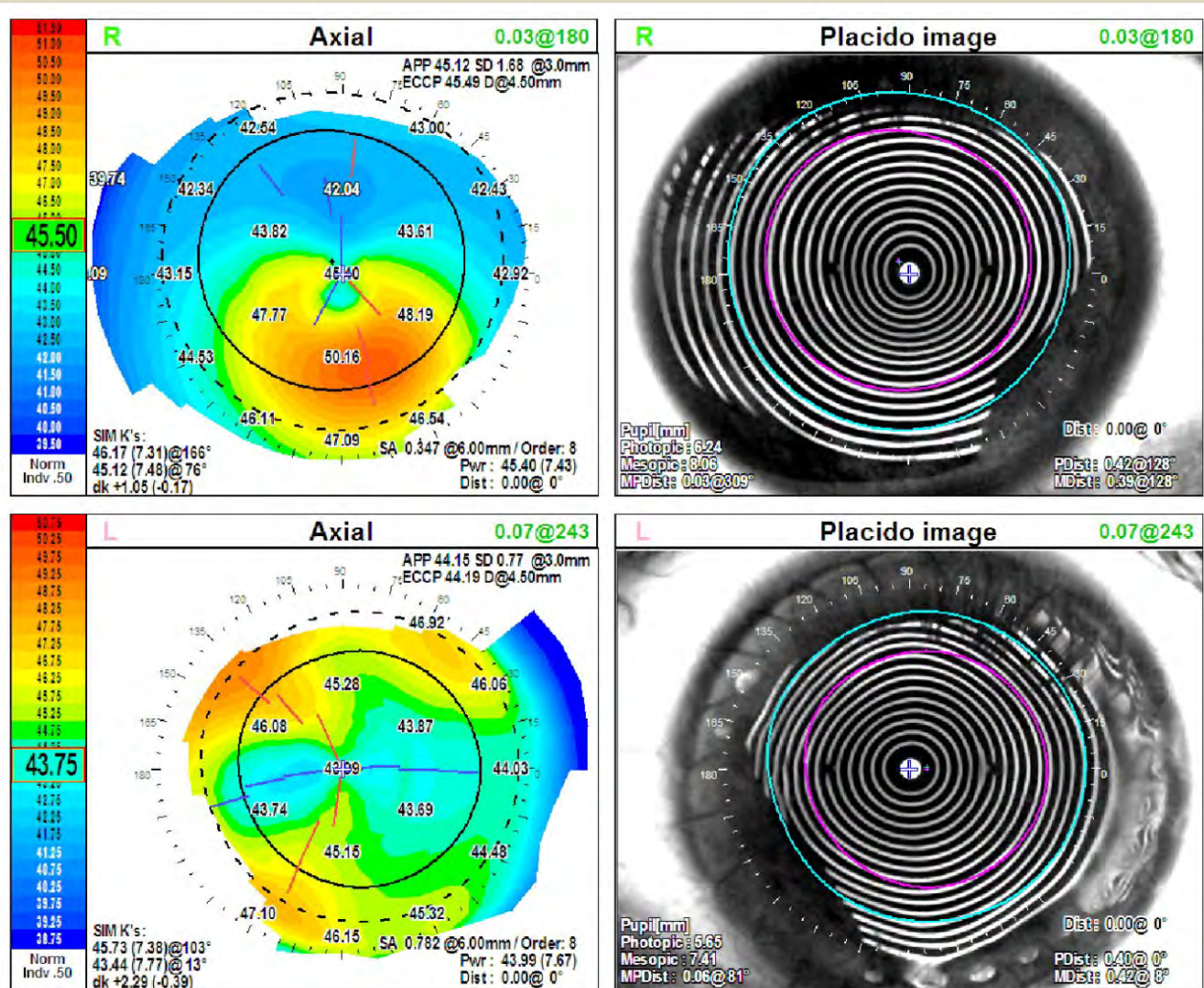
Case #3: Right eye: Mild Keratoconus (Top) Left eye: Severe Keratoconus (Bottom)



Case #3: Left eye (Bottom):

2 mos later: **Uncorrected VA 20/40**

DALK 10.0mm

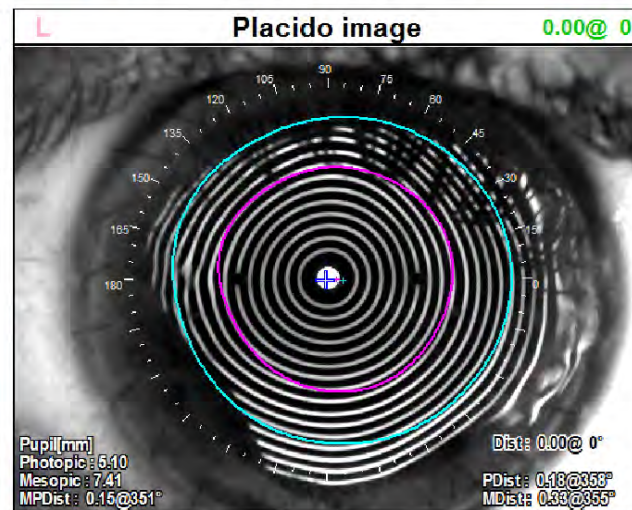
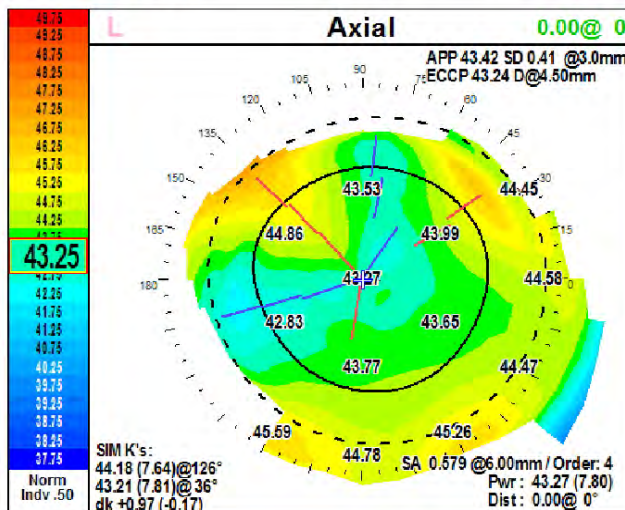
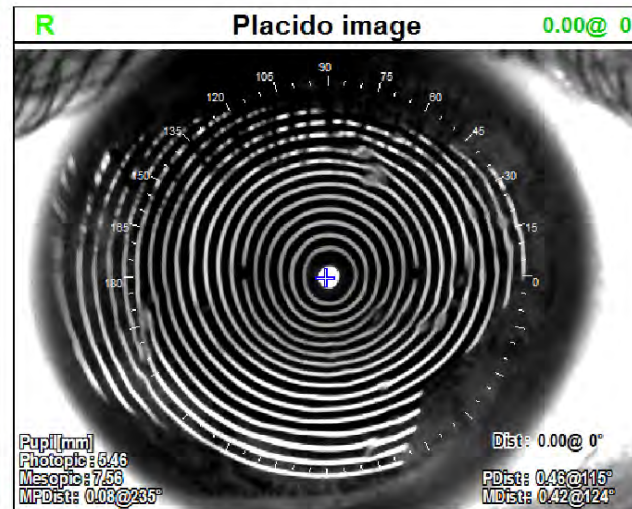
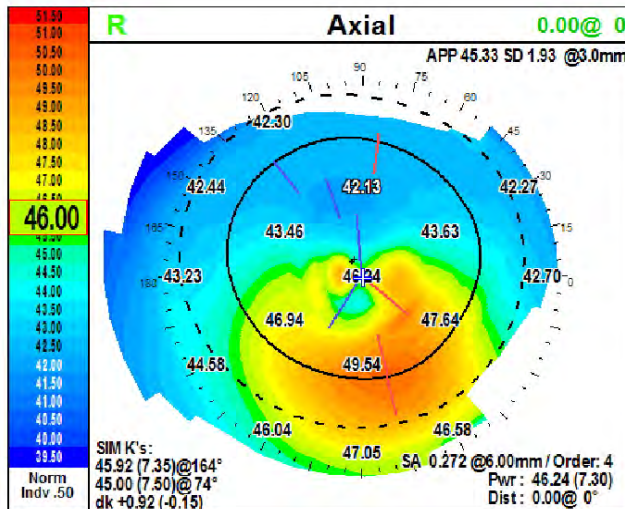


Case #3: Left eye (Bottom):

1yr later: Uncorrected VA 20/25

-0.75 20/20

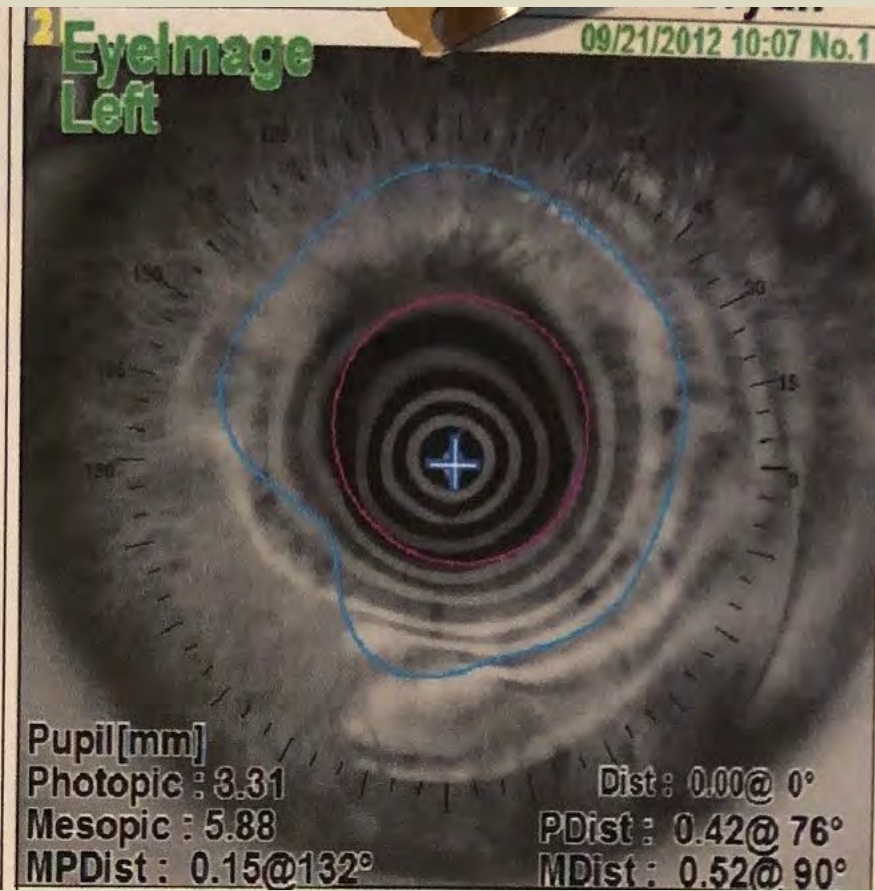
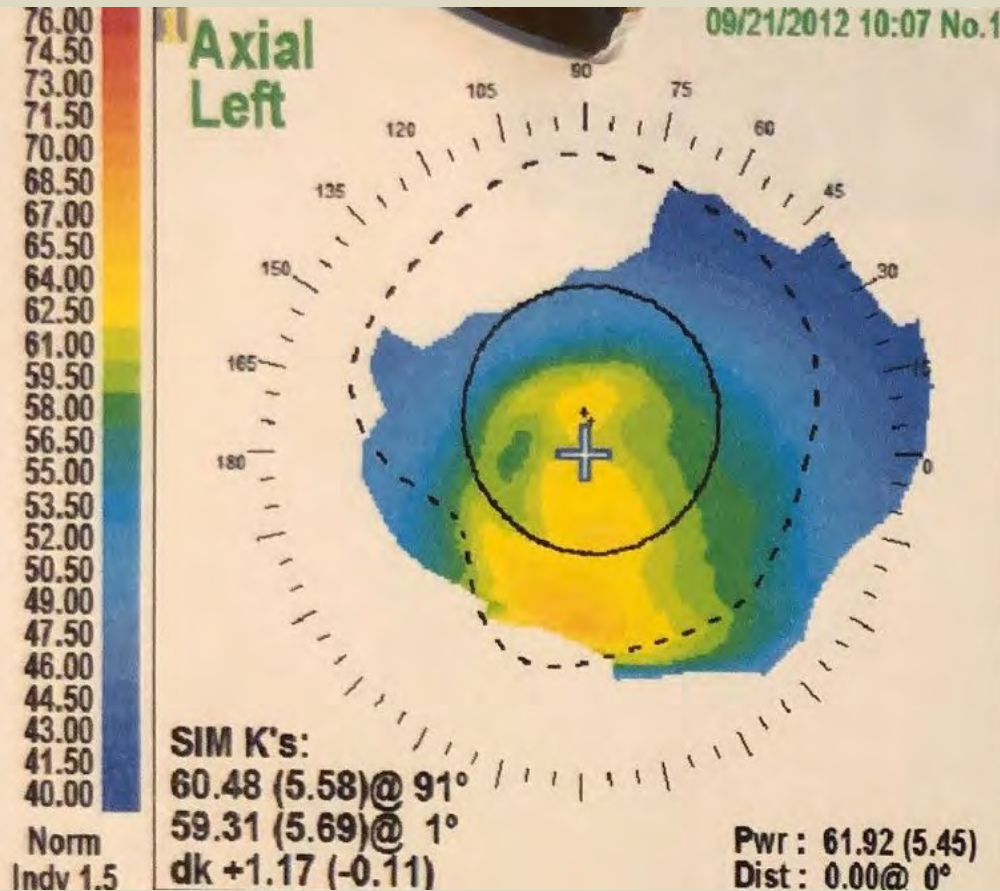
DALK 10.0mm



Keratoconus/Dalk/Long term stability?

CASE #4

Dec. 2012 23yo male Keratoconus -19.0+6.25x93 20/300 DALK 9.5mm pre-descemets dissection



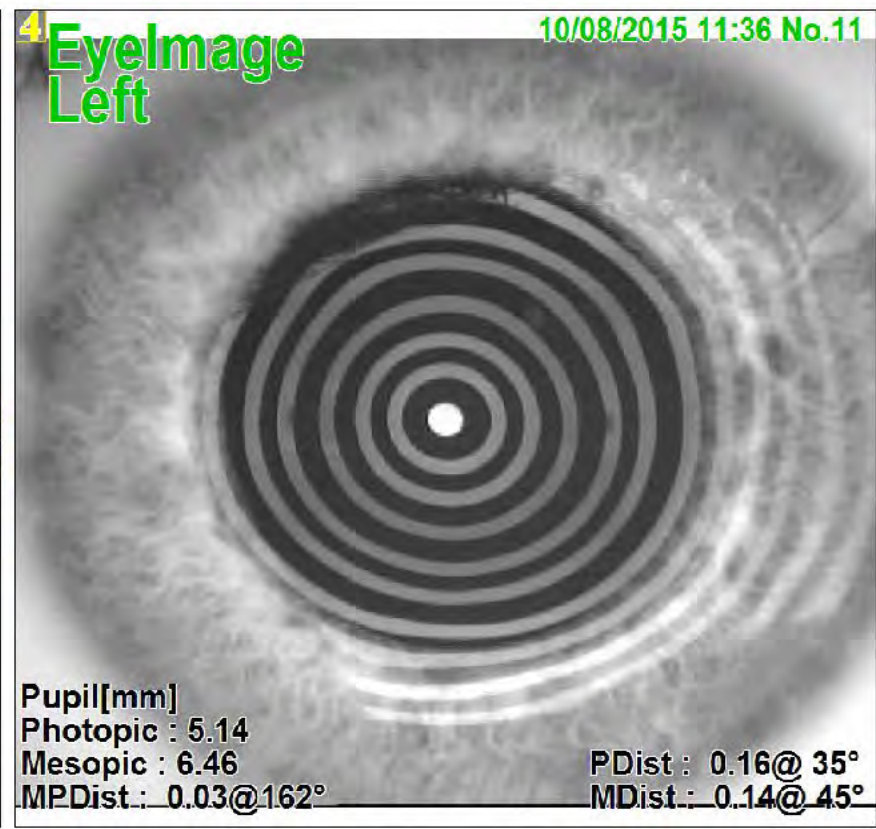
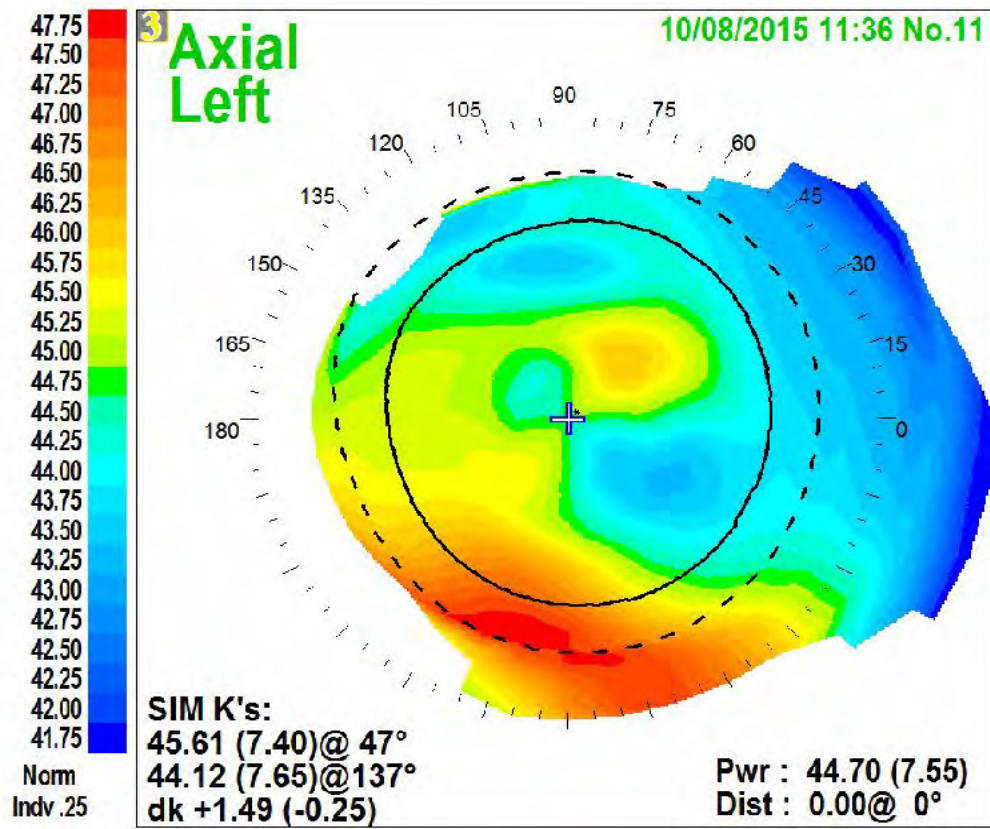
Case #4

Left Eye

Aug 2015 (2.7yrs aft DALK)

Rx: -2.75+1.0x53 20/25

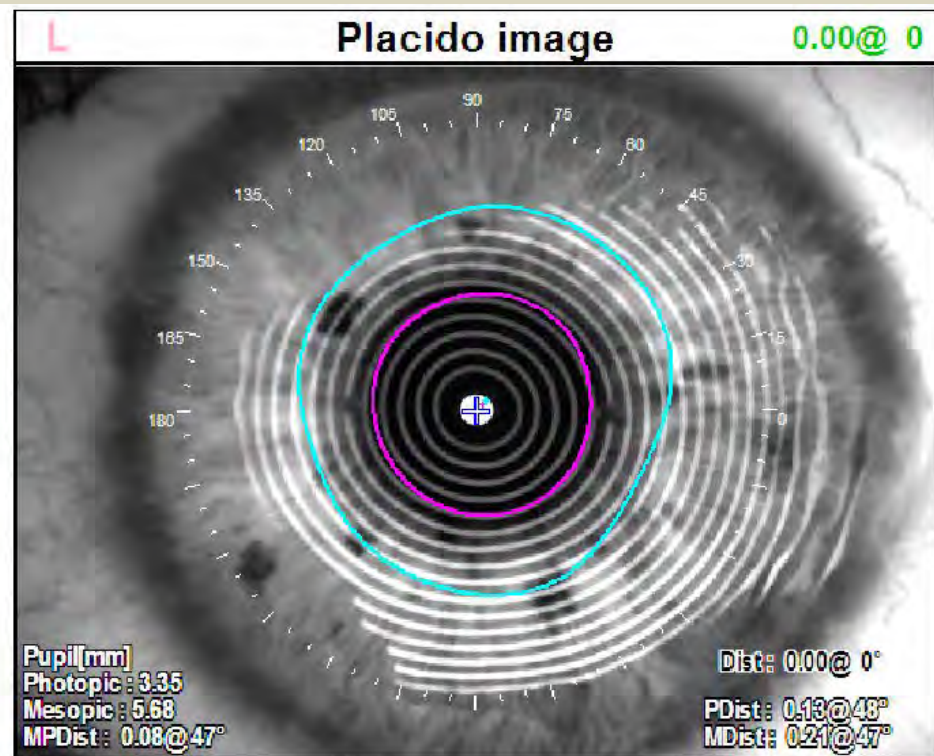
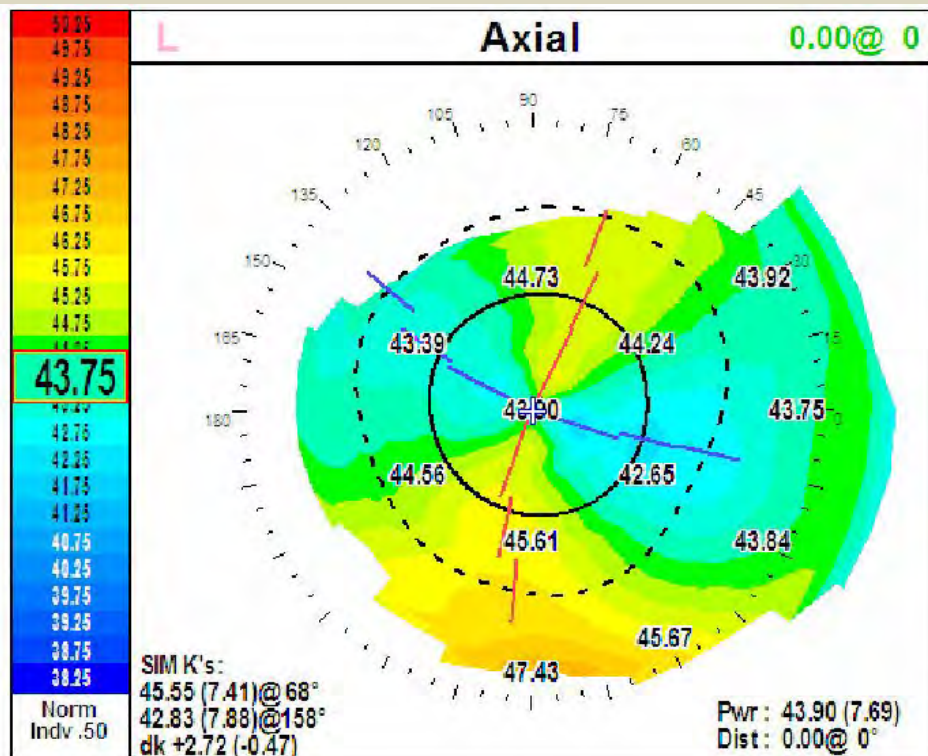
removed running corneal suture



Case #4

Apr. 2017 (4.5yrs aft DALK, 1.5yrs aft suture removal)

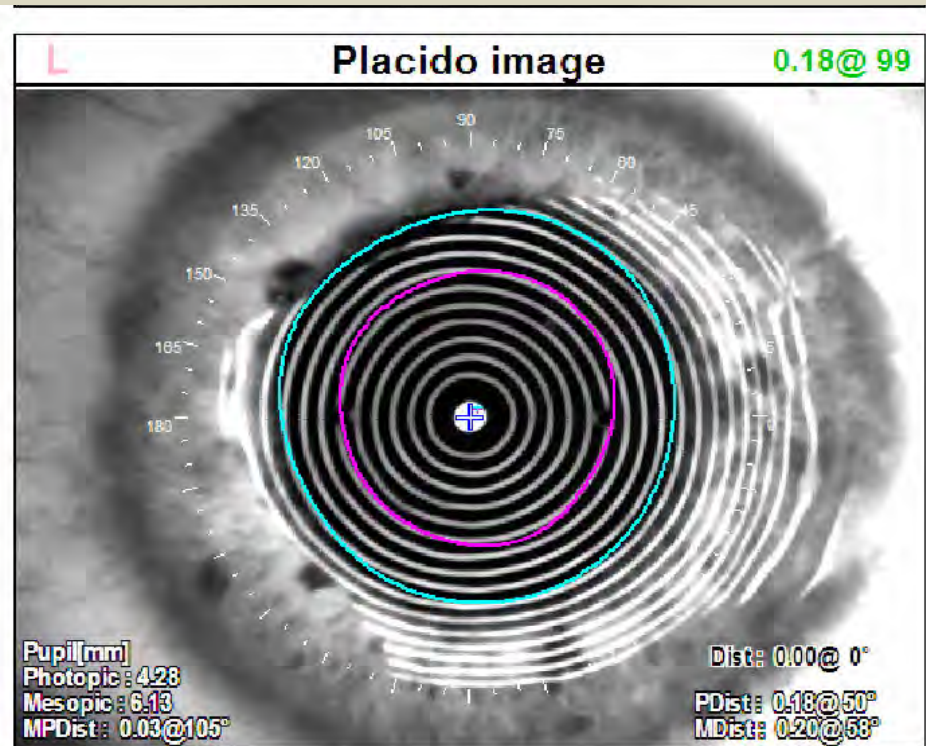
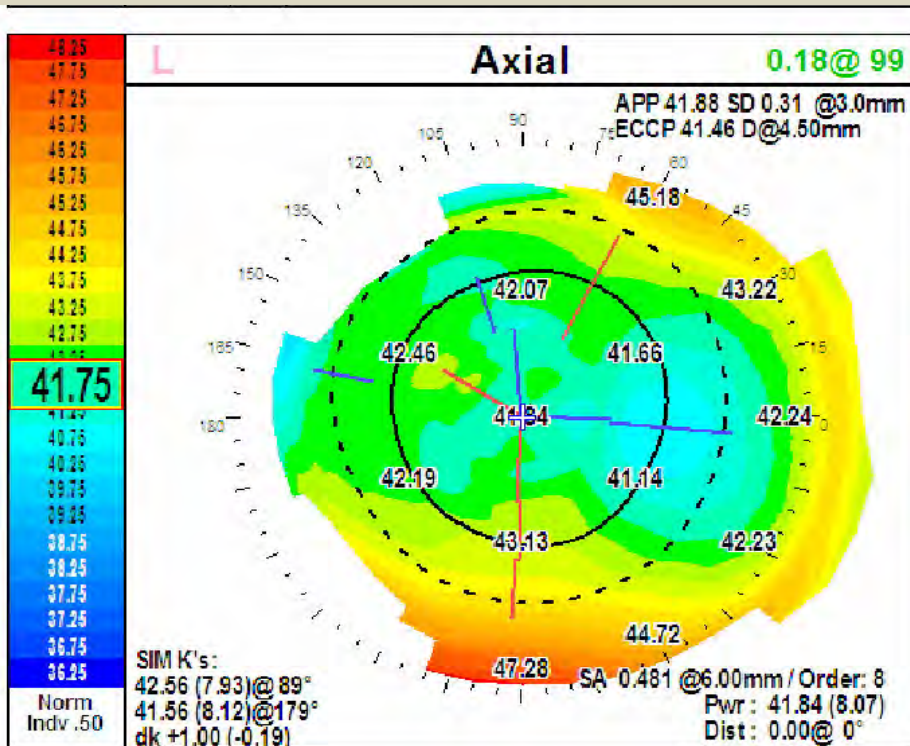
Rx: -3.75+2.5x67 20/20



Case #4

May 2017 LASIK (4.5yrs aft DALK)

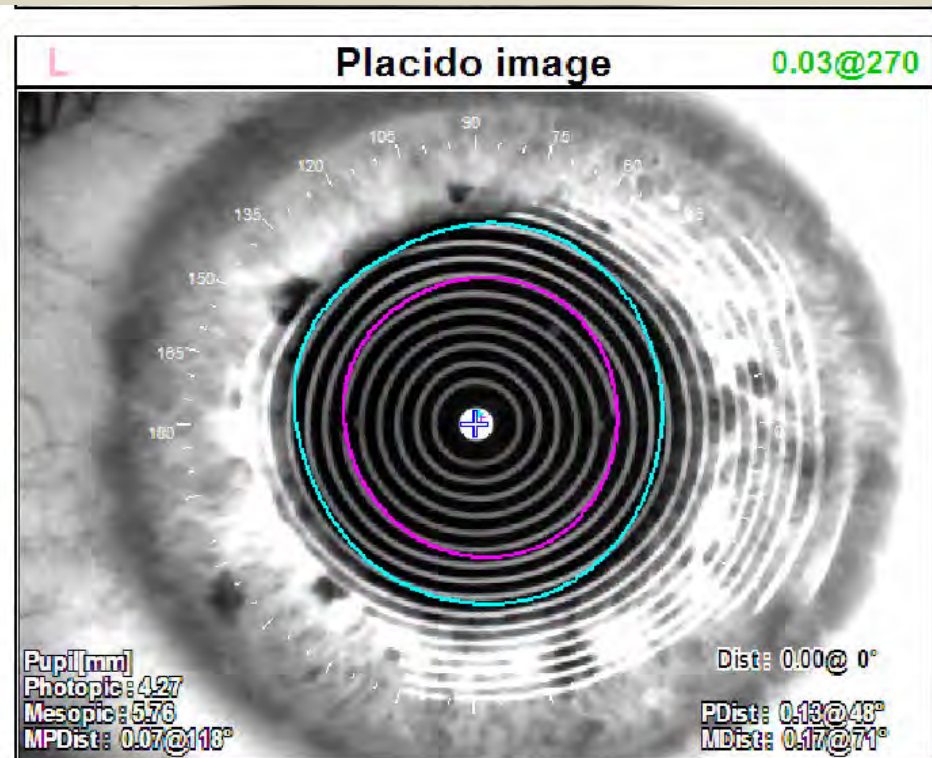
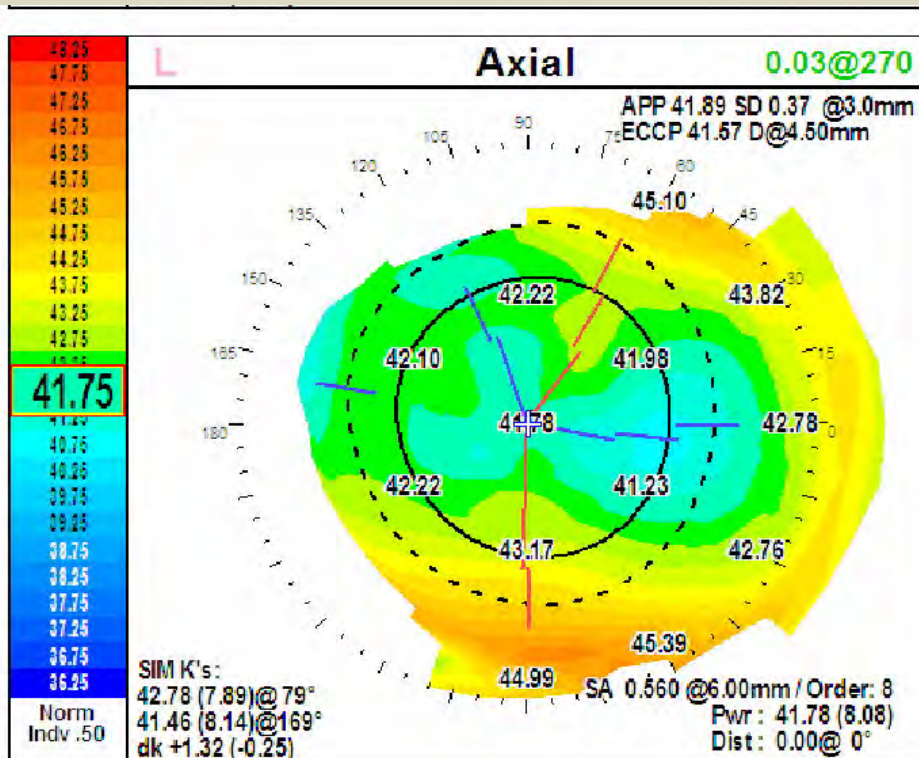
June 2017 Rx: -0.5+0.5x150 20/30 (2wks aft LASIK)



Case #4

Oct. 2018 (6yrs. aft DALK, 1.5yrs aft LASIK)

Uncorrected VA 20/20-1 -1+0.5x135 20/20



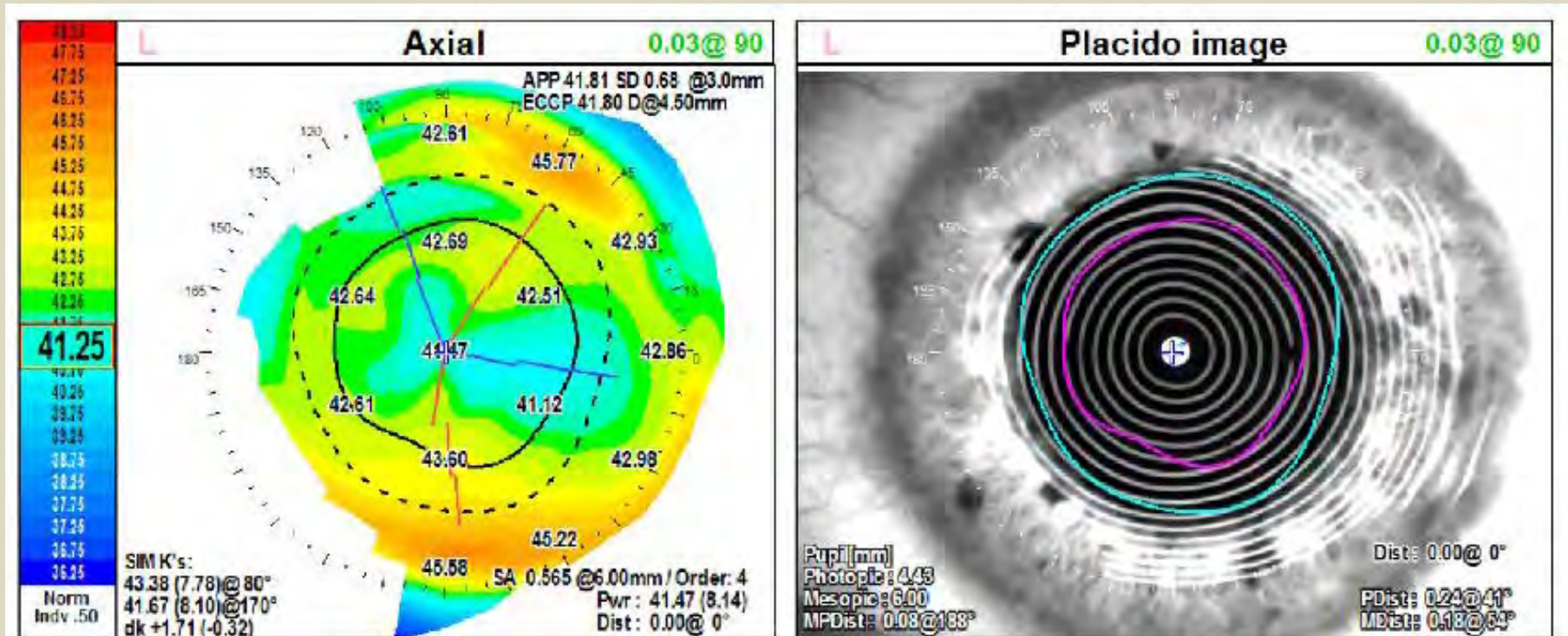
Case #4

Left Eye

Now age 33

March 2023 (10yrs. aft DALK, 6yrs aft LASIK)

Uncorrected VA 20/25 -1+0.5x135 20/20

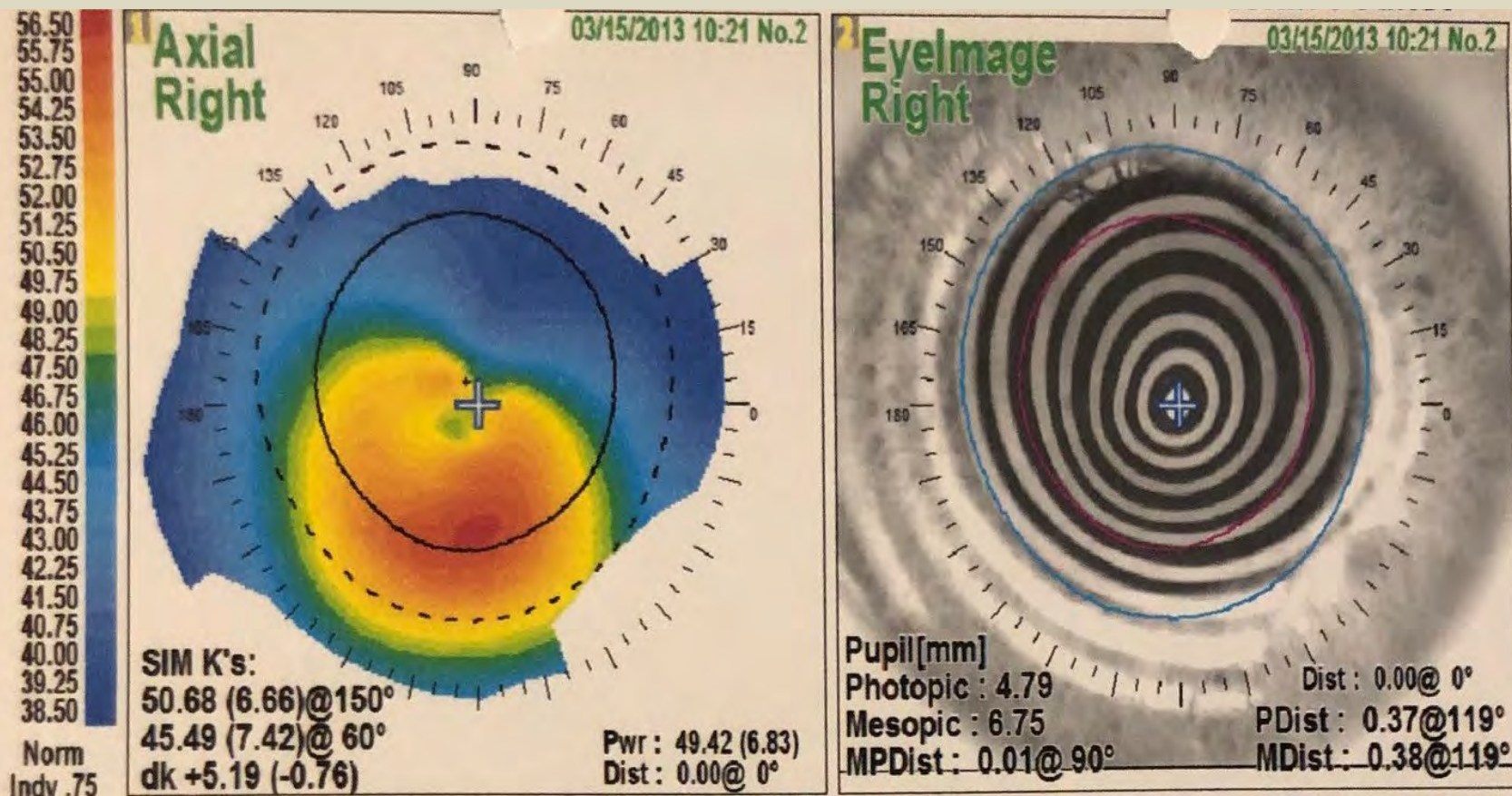


What about his right eye?

Case #4

Right Eye

March 2013 24 yo male Keratoconus -6.0+3.75x133 20/40



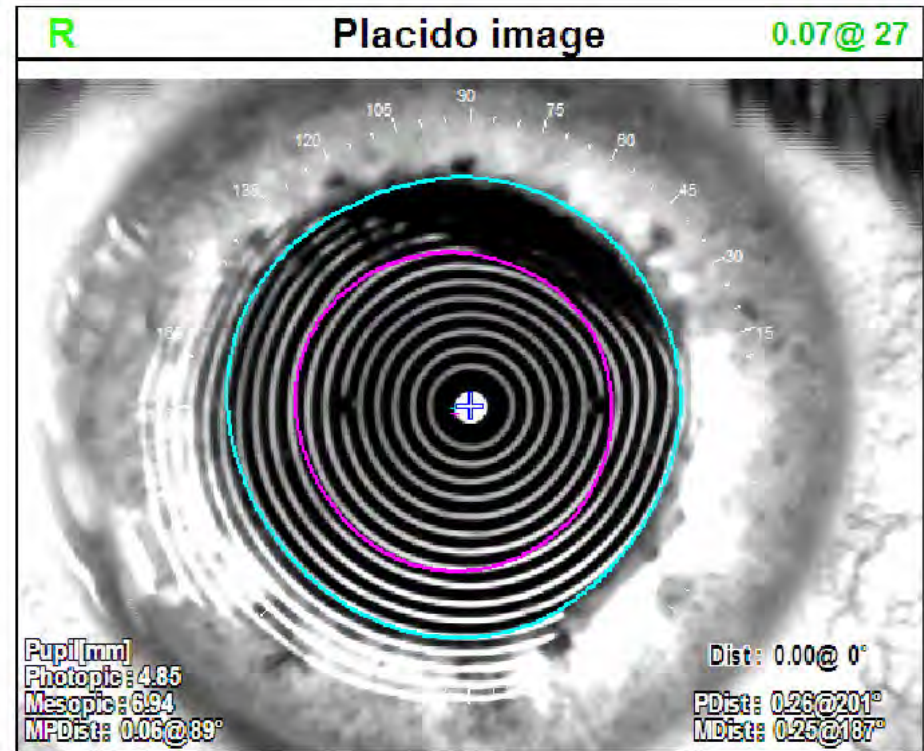
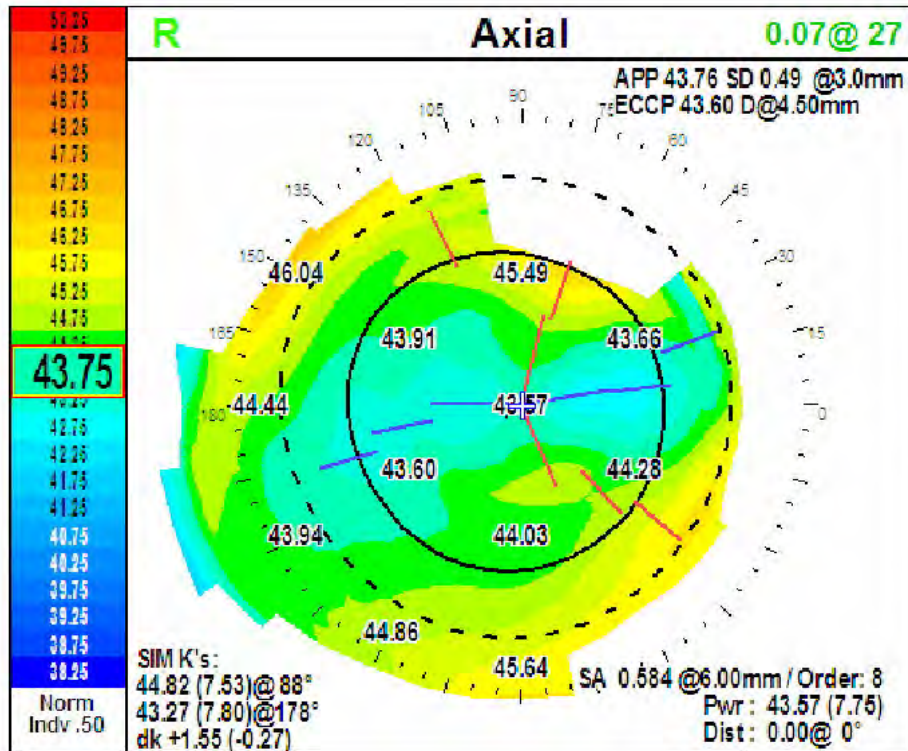
Case #4

Dec. 2013 DALK 9.5mm - big bubble

Right Eye

Feb. 2016 (2yrs aft DALK) : remove running cornea suture

Mar. 2016 (6wks aft suture removal) : -2.0+1.5x85 20/20



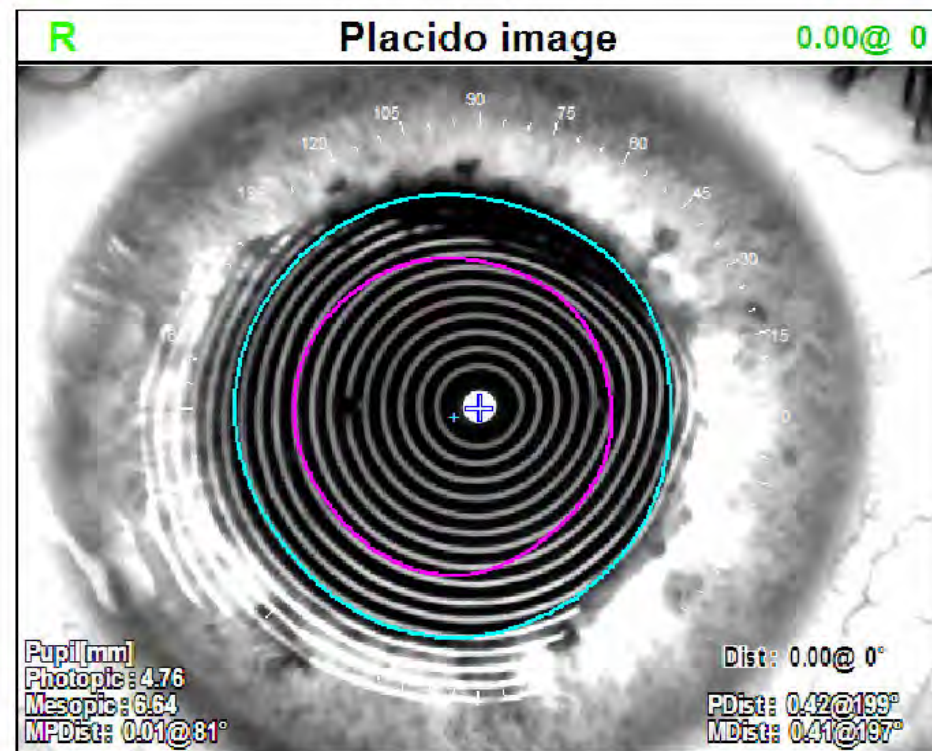
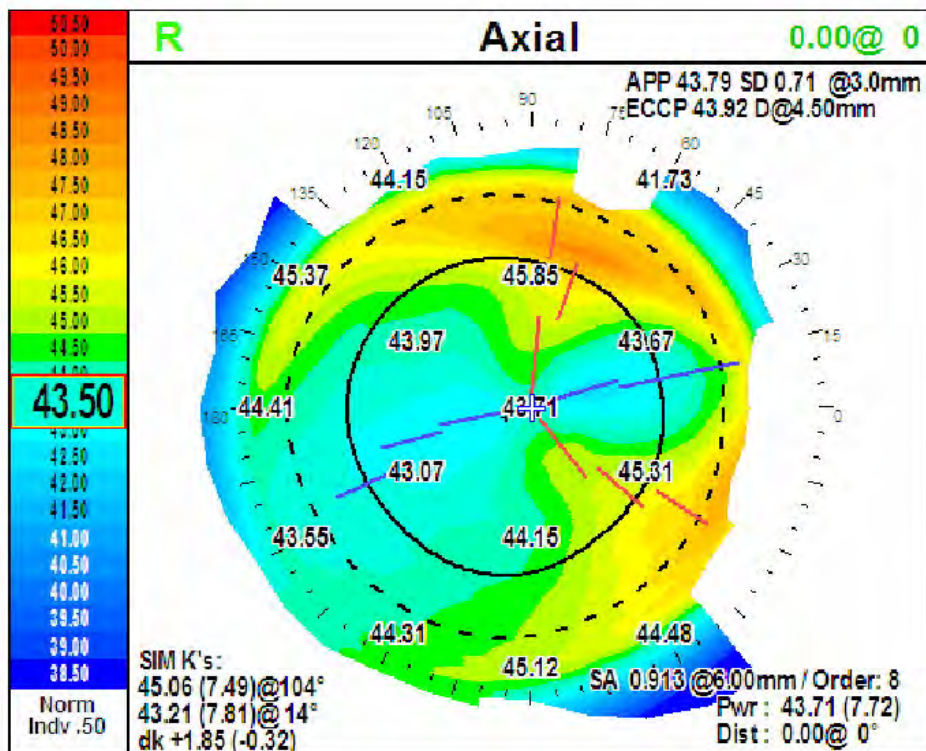
Case #4

Feb. 2018 (4yrs aft DALK - 2yrs aft suture removal)

Right Eye

-2.5+2.25x100 20/20

Feb. 2018 OD: LASIK



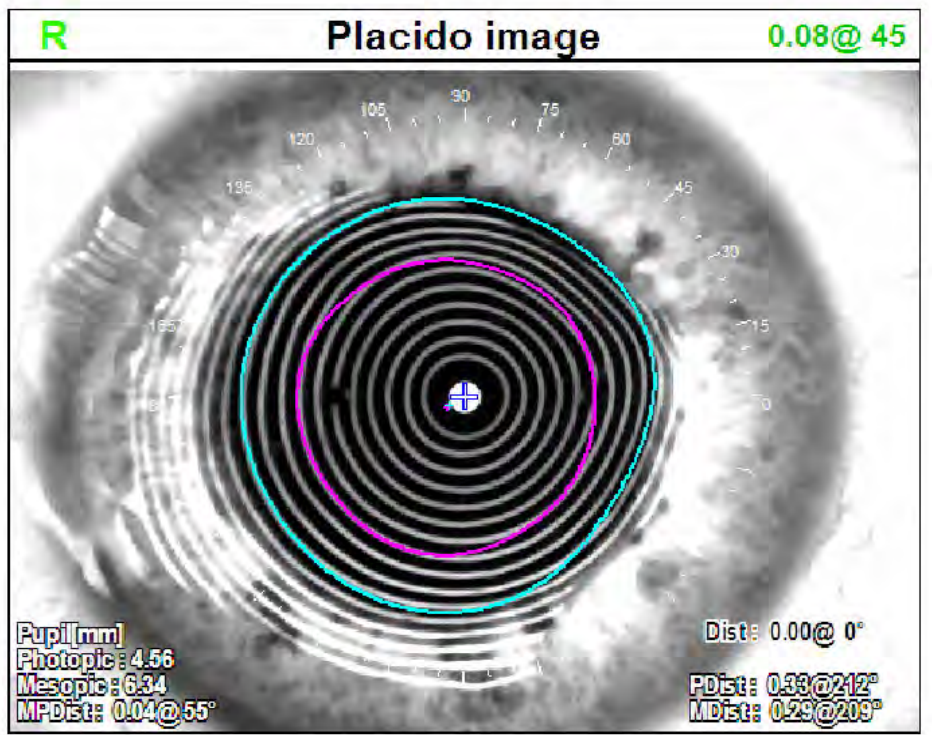
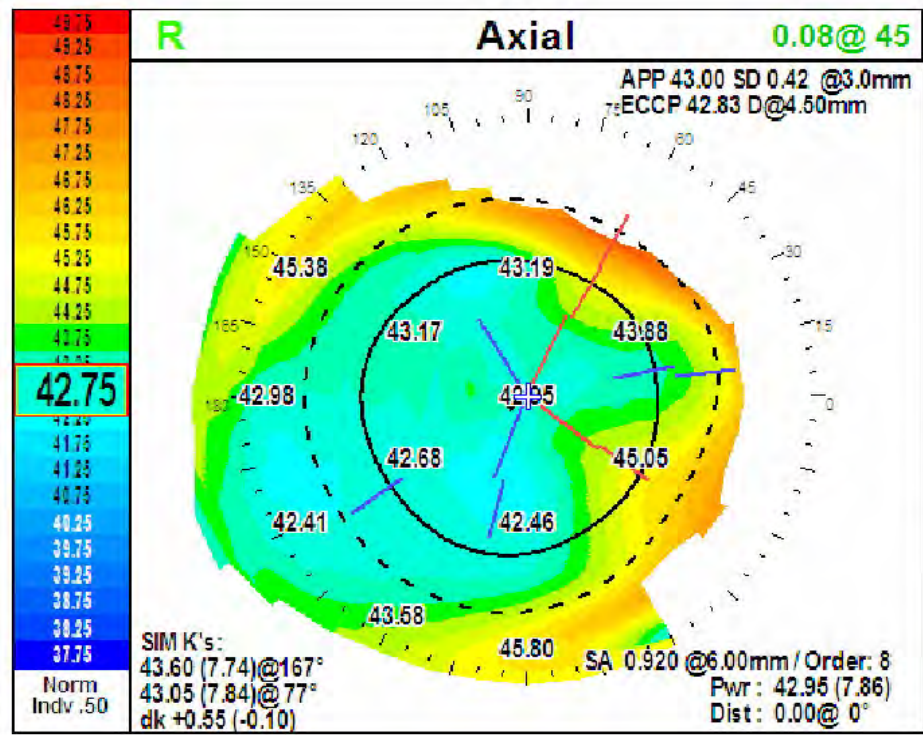
Case #4

Right Eye

Oct 2018 29yo (5yrs aft DALK/1yr aft LASIK)

Uncorrected VA 20/25

-0.75 20/20



Case #4

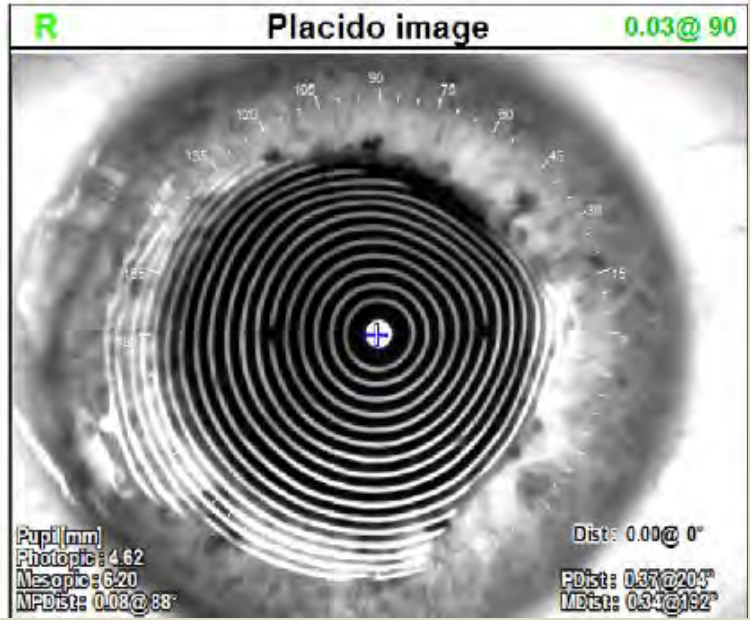
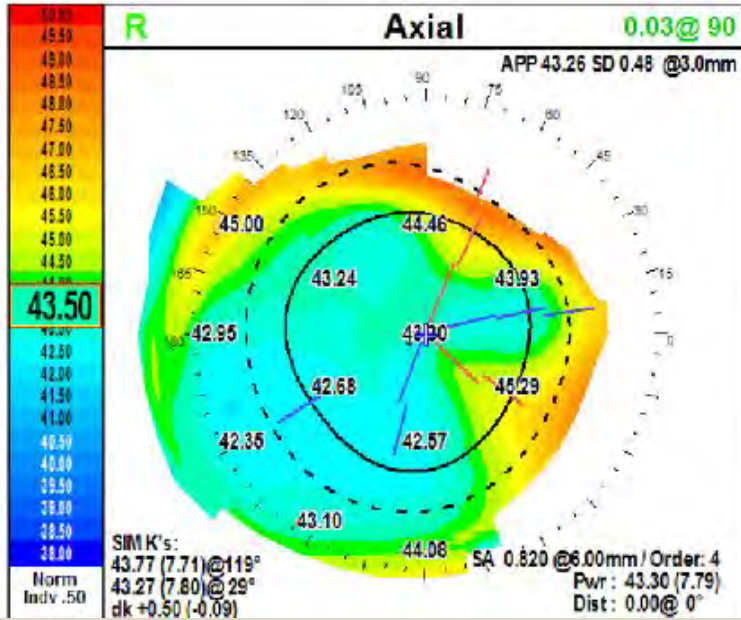
Right Eye

March 2023 now 33yo (9.5yrs aft DALK/5yrs aft LASIK,)

Uncorrected VA 20/20

-0.50 20/20

R	03/01/2023 13:46	Comment	R	Diagnosis	R
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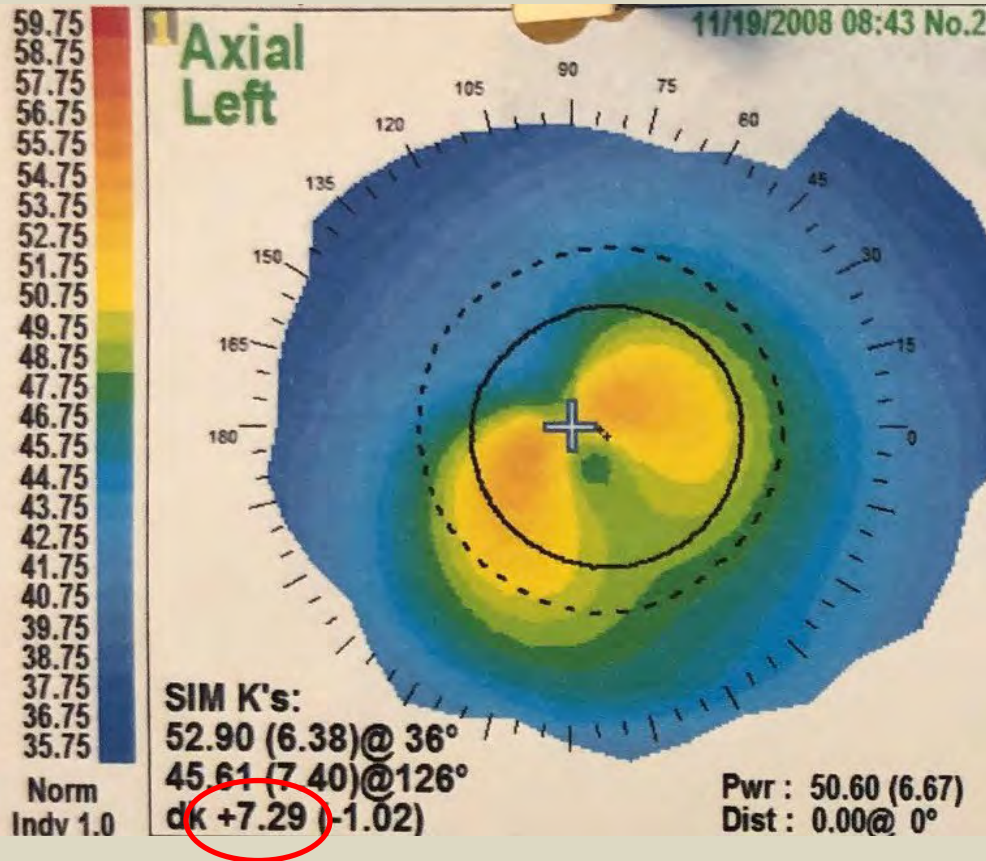
Case #5

Left Eye

64yo Keratoconus and Cataract

-4.75+4.50x4 20/60-

8/25/2009 DALK 8.5mm predescemets dissection

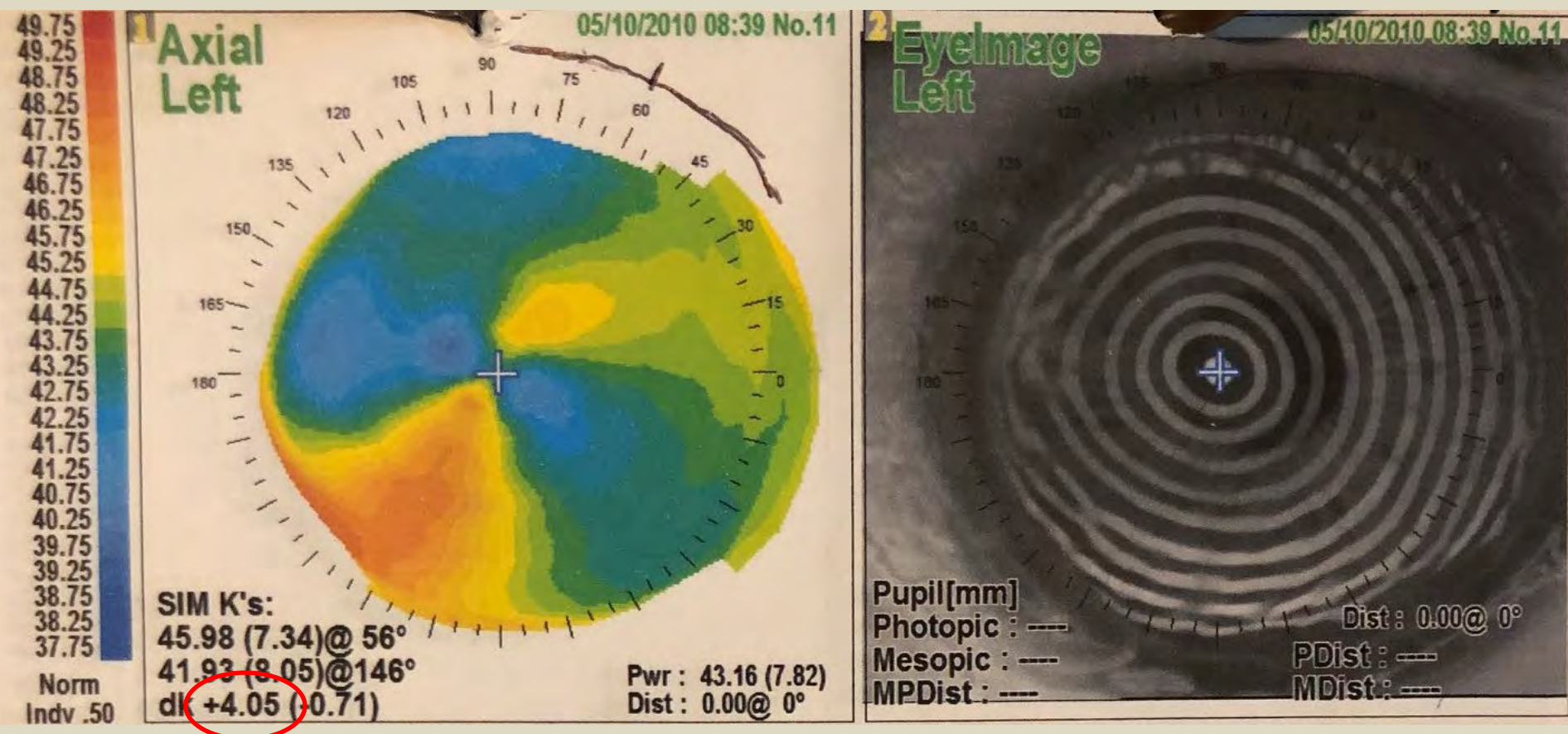


Case #5

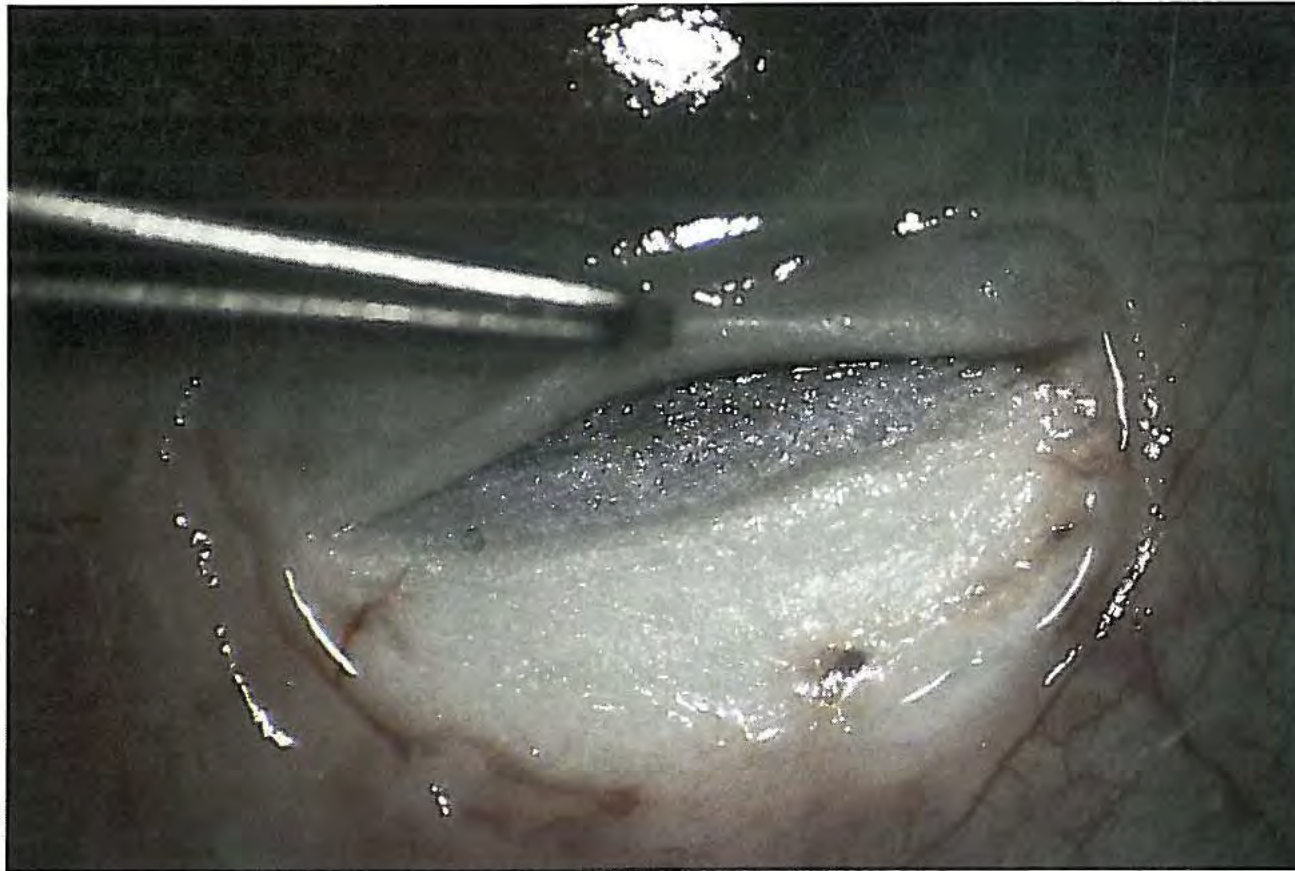
Left Eye

Mar. 2010 (8mos aft DALK) Running Cornea Suture Out

May 2010 Cataract Extraction with long (7mm) Scleral tunnel incision x 60 (on steep axis) and Staar AQ2010V 18.5 IOL



The Incision



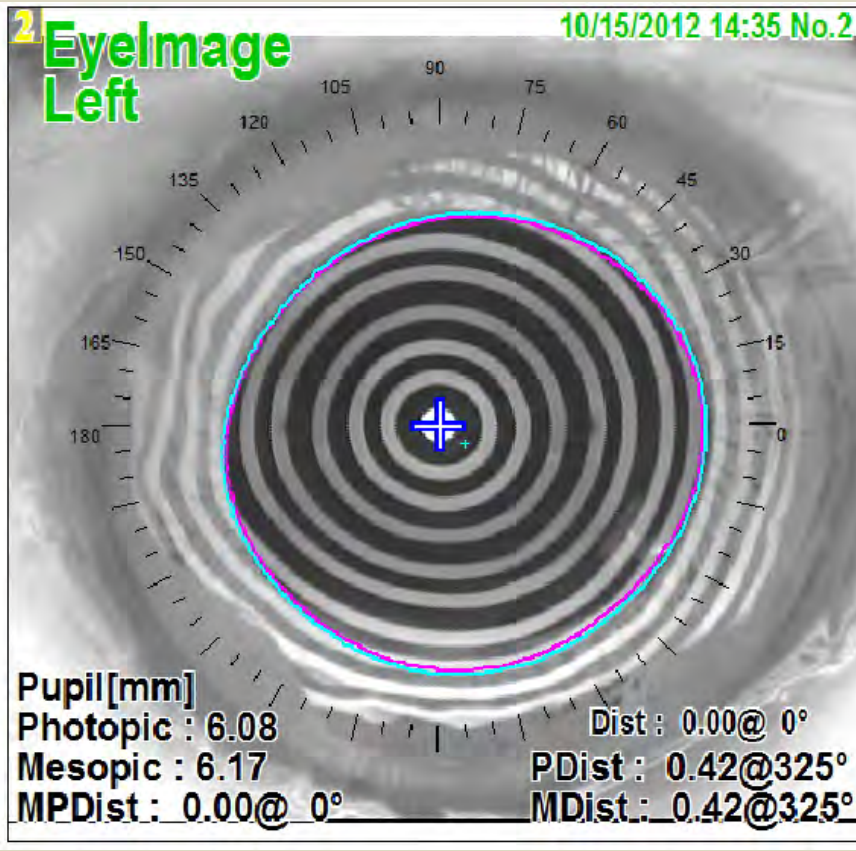
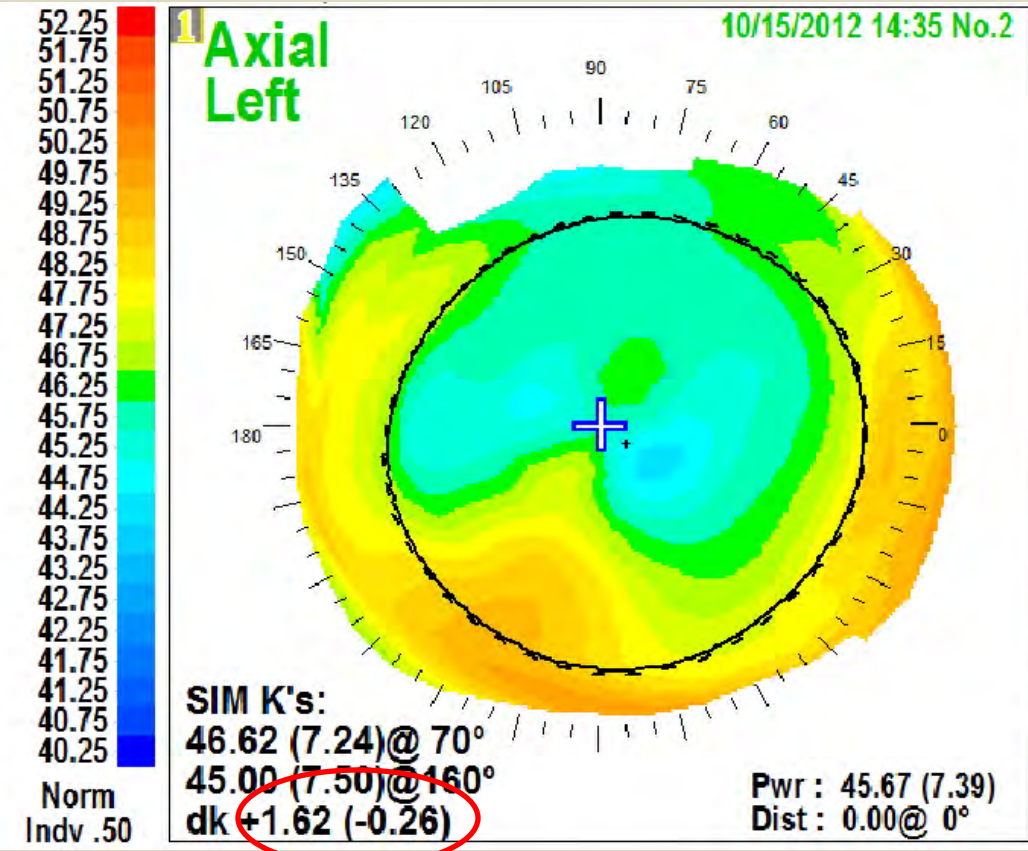
3-7. Shelf of the incision. The shelf portion of the incision holds the iris back and helps prevent iris prolapse.

Case #5

Left Eye

Oct. 2012

3yrs aft DALK, 2yrs aft Cat Ext monofocal IOL long scleral tunnel steep axis
-3.5+0.50 x 22 20/25-2 (note: **low topo cyl 1.62** – circled in red)

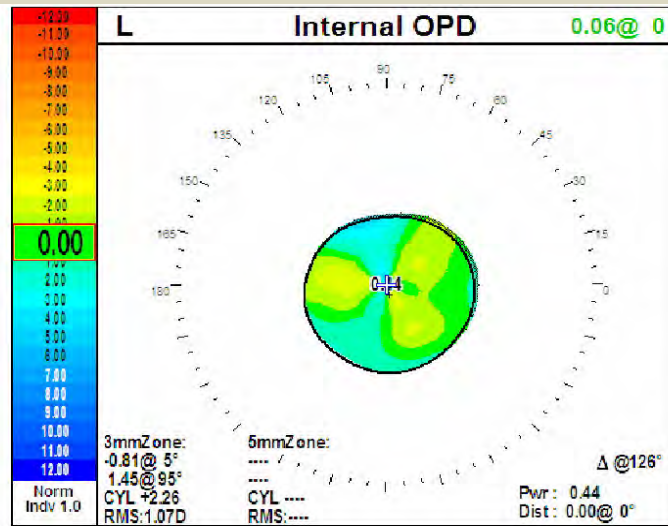
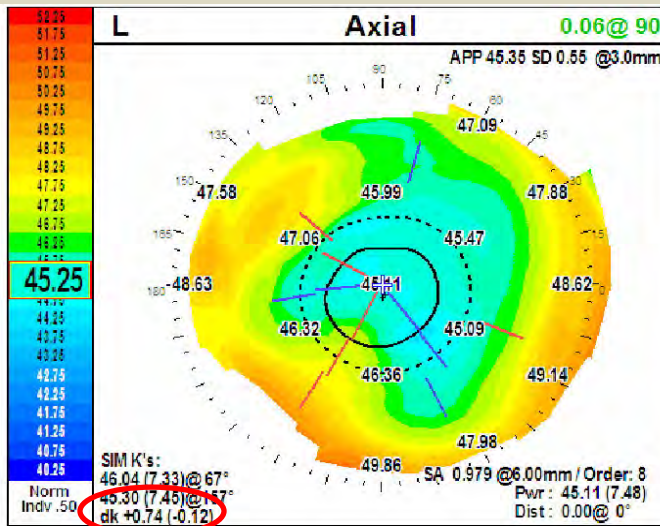


Case #5

Left Eye

Oct 2018 73 yo (9.5 yrs aft DALK, 8.5yrs aft Cat Ext monofocal IOL w long scleral tunnel on steep axis) -3.5+0.50 x 22 20/25-2

(note: low topo cyl 0.74 – circled in red)



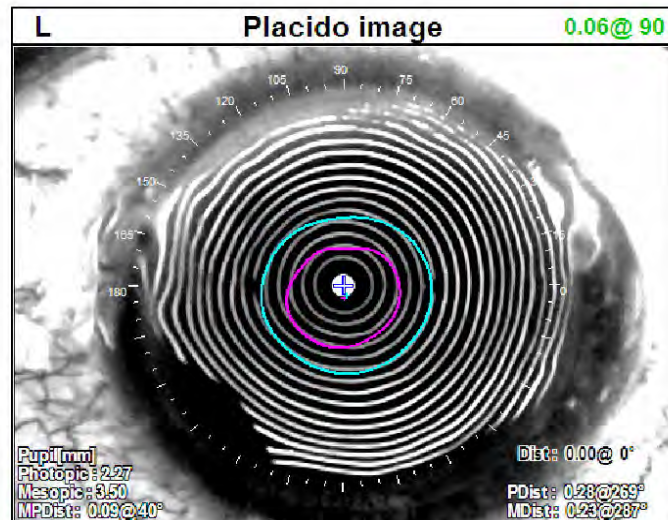
HOA [μ m]: Cornea@6.00mm L

Total, Internal@3.80mm / Order = 3

	T.Sph	T.Coma	T.Tre	HO
Total:	0.000	0.107	0.660	0.668
Cornea:	0.000	0.647	1.204	1.367
Internal:	0.000	0.020	0.865	0.866

Refraction: VD = 13.75mm

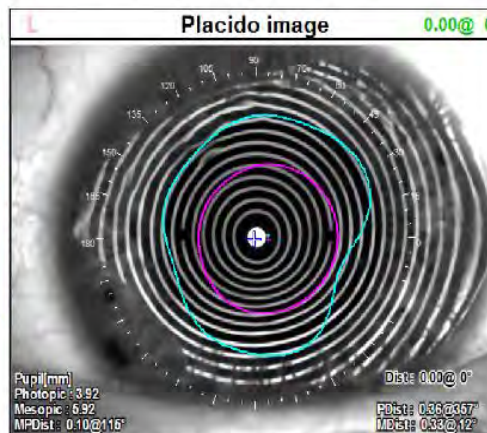
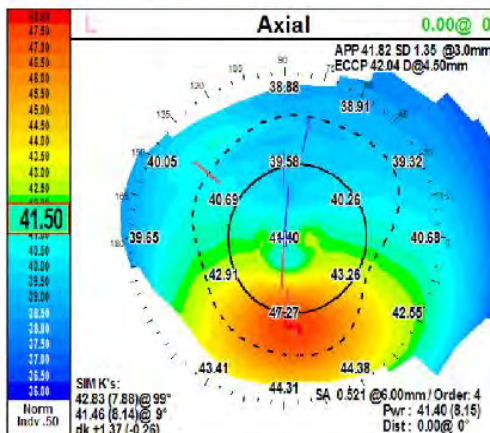
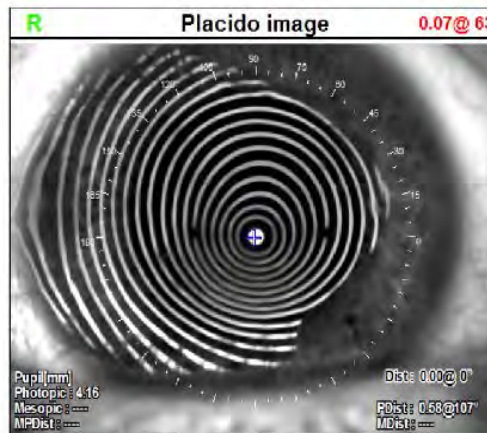
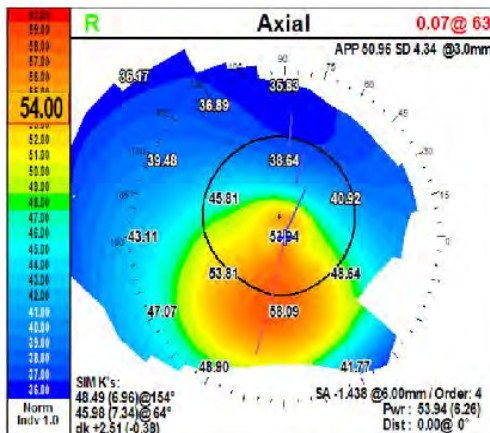
	Sph	Cyl	Axis	RMS
REF	-3.75	+2.00	13	
WF@3.50	-3.75	+2.00	12	0.57D
Diff	0.00	0.00	-1	



Case #6: 32 yo man c/o Poor Vision OD CL intolerant Advanced Keratoconus OD >OS 2021 Corneal Cross-Linking (CXL) OU - elsewhere

		Technician	
L	11/29/2021 09:21	Comment	L
R	11/29/2021 09:21		R
		Diagnosis	L
			R

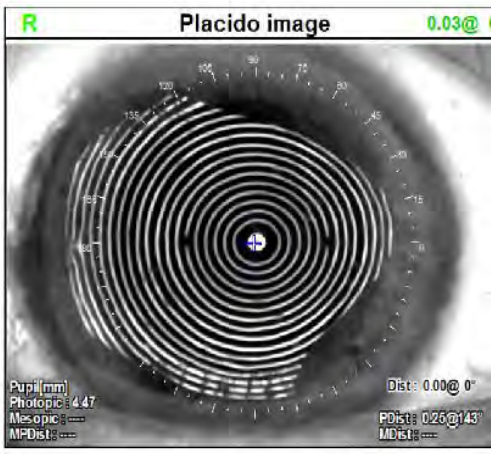
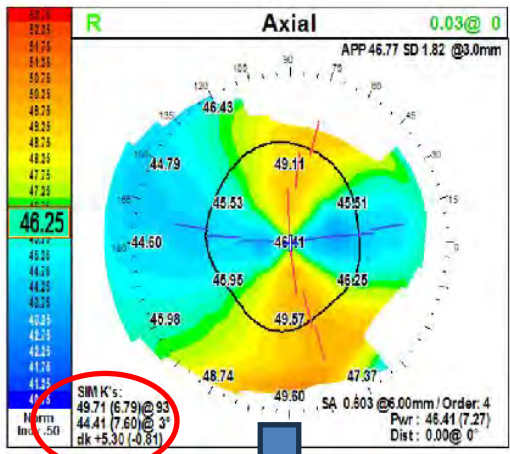
OD: -18.75+2.75x15 20/80



OS: -3.5+1.25x142 20/20

Case #6: 32 yo man Keratoconus OD >OS
 9/22/2022 OD: removed running suture
 12/2021 OD: DALK 9.5mm bed/9.5mm donor laterality matched
 2021 Corneal Cross-Linking (CXL) OU

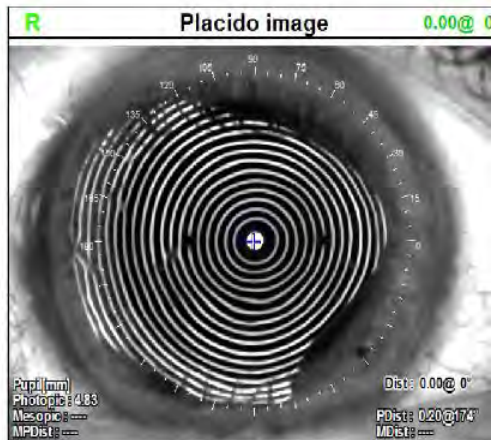
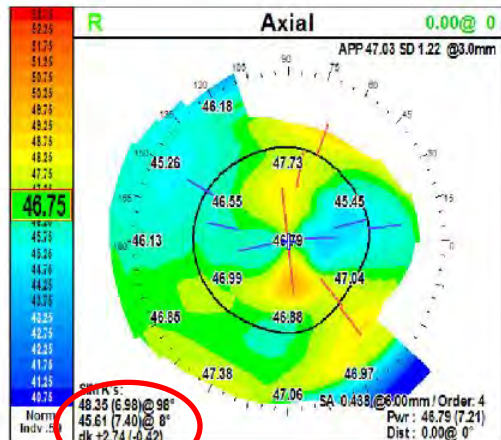
L	11/28/2022 08:04	Comment	L	Diagnosis	L
R	11/28/2022 08:04		R		R



OD: -10.75 +5.50x96 20/20

12/6/2022 AK Paired Scleral tunnel

L	06/14/2023 09:00	Comment	L	Diagnosis	L
R	06/14/2023 09:00		R		R



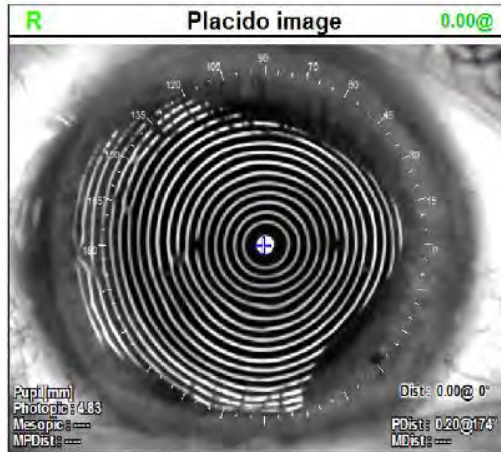
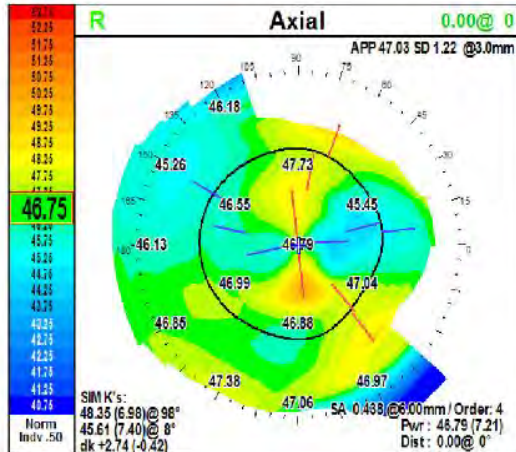
OD: -11.5 +3.0x95 20/20

Richard Erdey MD

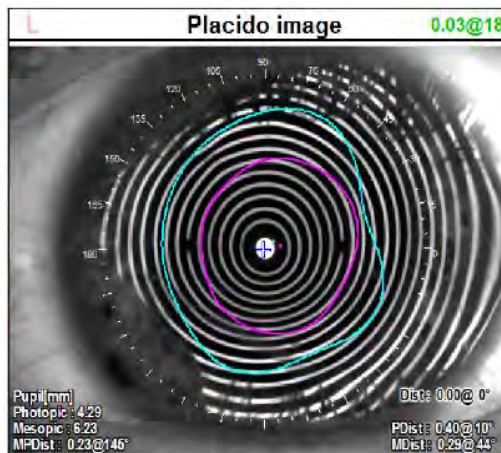
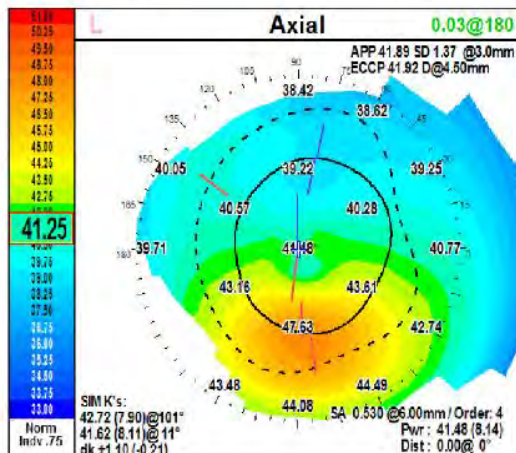
Case #6: 32 yo man Keratoconus OD > OS
 9/22/2022 OD: removed running suture
 12/2021 OD: DALK 9.5mm bed/9.5mm donor laterality matched
 2021 Corneal Cross-Linking (CXL) OU

L	06/14/2023 09:00		L		Diagnosis	L	
R	06/14/2023 09:00	Comment	R			R	

OD: -11.5+3.0x95 **20/20**



1/2024 Toric ICL PLANO 20/20



Topo/Rx impvt 3 yrs aft CXL

OS: -3.5+1.5x142 **20/20**

1/2024 Toric ICL PLANO 20/20

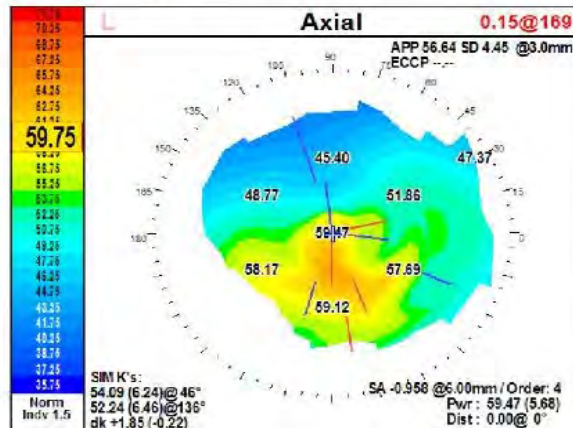
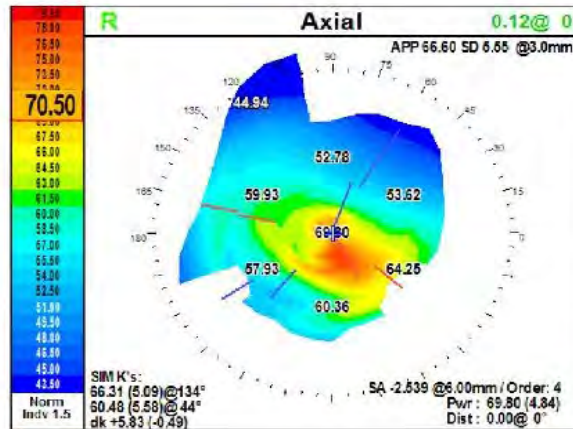
Case #7: 48 yo m Severe Keratoconus OU

2024 OD: intolerant of scleral CL OS: Scleral CL

2013: Repeat CXL OU

2012: CXL OU

		Technician			
R	10/23/2023 14:48	Comment	R	Diagnosis	R
L	10/23/2023 14:48		L		L



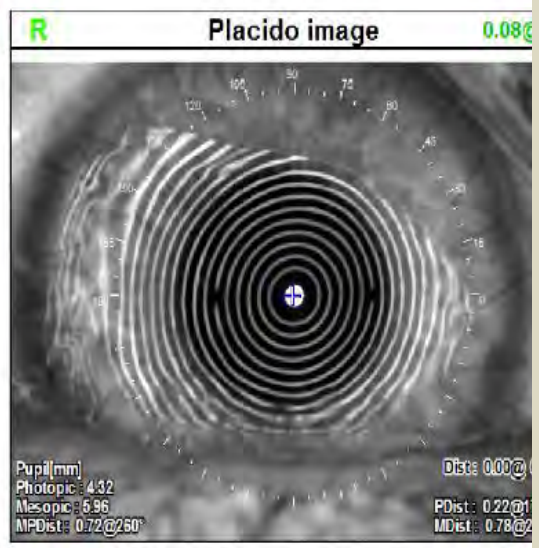
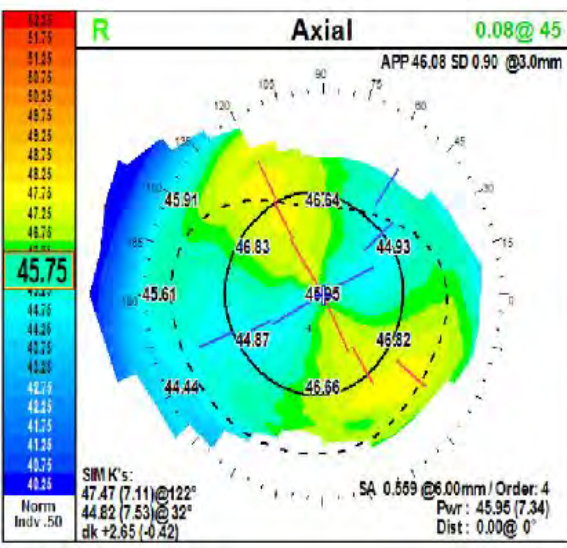
Case #7: 48 yo m Severe Keratoconus OU

6/2024 OD Topo below

3/2024 OD: DALK 10.0mm bed/10.0mm donor laterality matched, nasal marked 24 bite running suture

2012/2013: CXL OU x 2

Patient		Technician	
L	09/06/2024 08:35	L	
R	09/06/2024 08:35	R	
Comment		Diagnosis	



-8.50 +1.25 x 84 **20/20**

Wearing Soft CL for binocularity with scleral CL OS

Case #7: 48 yo m Severe Keratoconus OU

11/2024: topo below: increased astigmatism 6D

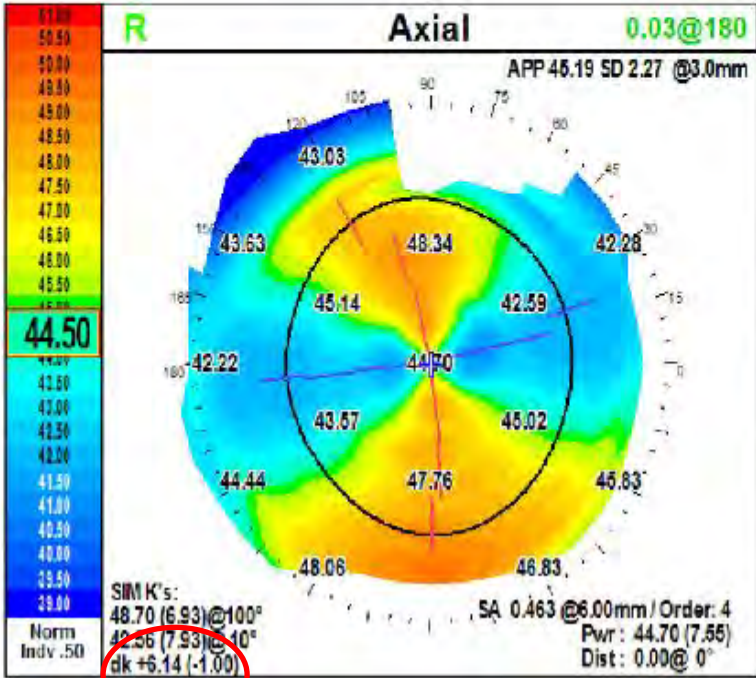
9/2024 running suture removed

3/2024 OD: DALK 10.0mm bed/10.0mm donor laterality matched, nasal marked

24 bite running suture

2012/2013: CXL OU x 2

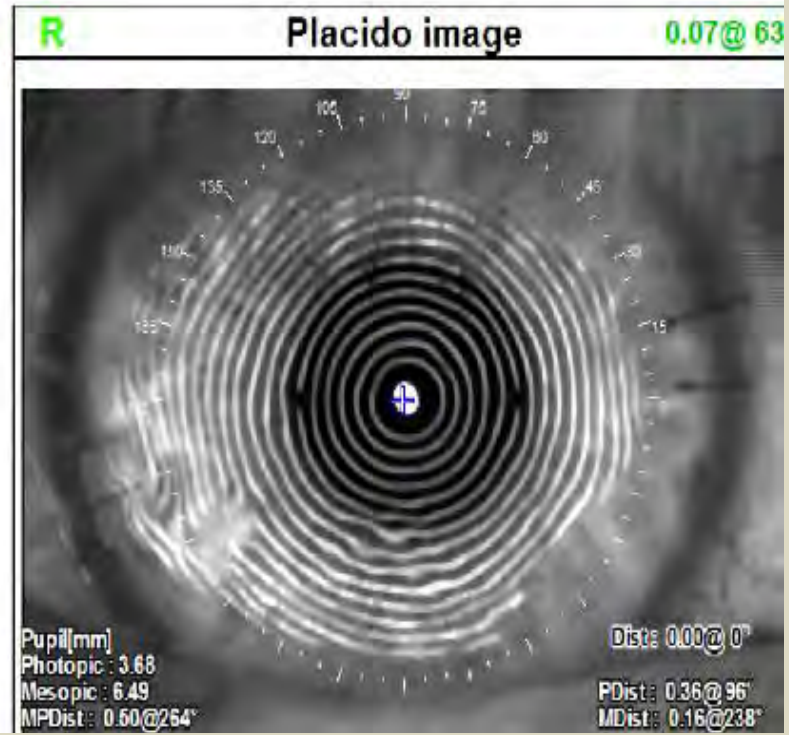
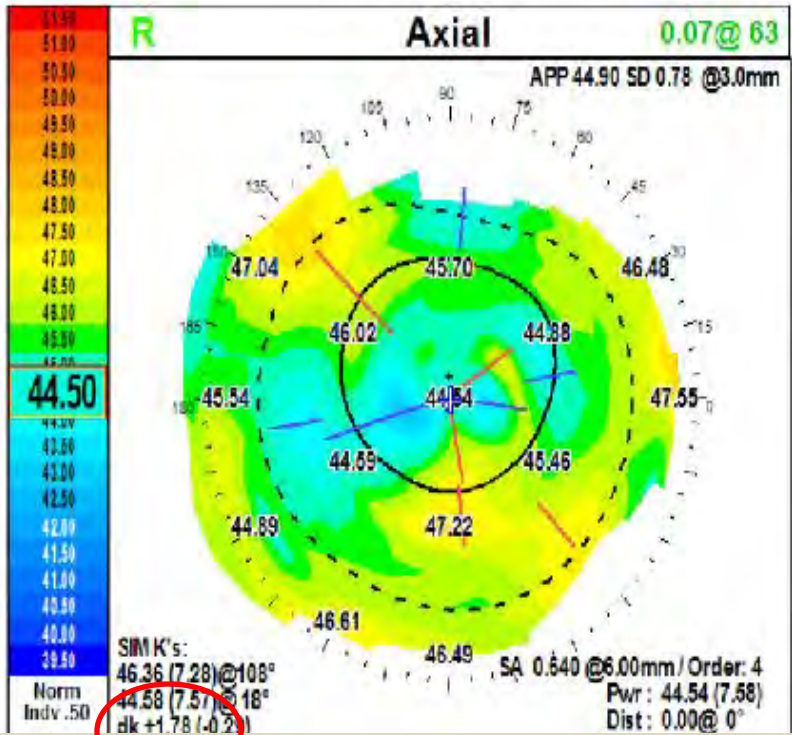
ny		Technician			
L	11/07/2024 09:00	Comment	L	Diagnosis	L
R	11/07/2024 09:00		R		R



Case #7: 48 yo m Severe Keratoconus OU

12/16/2024 OD: -8.25+0.75 x 90 dramatically reduced astigmatism!
12/3/2024 Astigmatic Keratotomy Scleral Tunnel (non-penetrating) superior/inferior
3/2024 OD: DALK 10.0mm bed/10.0mm donor laterality matched, nasal marked 24
bite running suture
2012/2013: CXL OU x 2

R	12/16/2024 10:01	Comment	R		Diagnosis	R	
L			L			L	



Case #7: Testimonial:

48 yo man after large diameter Dalk (right eye)
for severe keratoconus



<https://youtube.com/shorts/O05QLhLHNCU>

Case #7: Summary:

48 yo M after large diameter Dalk (right eye) for severe keratoconus

- Exceptional optical result with little residual astigmatism in corneal graft following suture-out paired Astigmatic Keratotomy OD
- Pt has since elected to have EVO-ICL OD to eliminate high residual myopia (-8.25+0.75x90)
- He intends to proceed with Large dia DALK OS

Case #7: Summary/Discussion:

48 yo M after large diameter Dalk (right eye) for severe keratoconus

- Richard Erdey, MD performed a large Dia (10.0mm) DALK for severe keratoconus in his left eye in 2024 after developing scleral contact lens intolerance. He had Cornea Cross Linking (CXL) in both eyes in 2012, repeated in both eyes in 2013 at a university center.
- There have been scattered reports of fortunate patients who experience gradual topographic/visual improvement over many years but corrective lenses are still required and optical aberrations interfering with night vision persist.
- CXL does NOT restore warped corneas. CXL moderate to severe warped corneas (keratoconus) is advocated by some in hopes of preventing keratoconus progression so that mandatory life-long Rigid Gas Permeable/scleral contact lenses (CL's) can be continued. The value proposition of CXL warped corneas FAILS to adequately address this growing problem due to excessive cumulative cost, lack of access and life-long cumulative risk of chronic specialty contact lens wear.
- CXL is increasingly very expensive and is a very poor population-based solution for warped corneas.
- CXL is NOT refractive surgery!
- Large Diameter DALK followed by EVO ICL (or cataract surgery w LAL): Graft lasts a lifetime and topography of a large diameter DALK is surprisingly STABLE. This combination meets every definition of an ideal REFRACTIVE SURGICAL PROCEDURE! The results are "LASIK-LIKE"!
- If this pt had instead elected to have DALK performed in 2012, at a minimum, he would have enjoyed Scleral Contact Lens independence for the last 12 years, saved the annual cost of CL replacement and avoid the lifetime cumulative risk of CL's. If he elected to have staged EVO ICL for the residual myopia after DALK, He would have enjoyed complete independence of corrective lenses for the last decade!

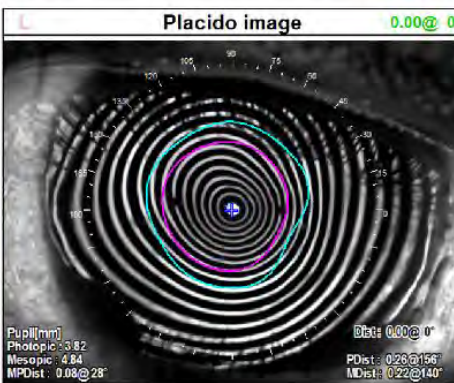
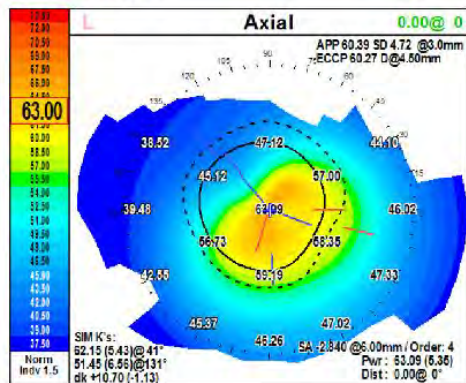
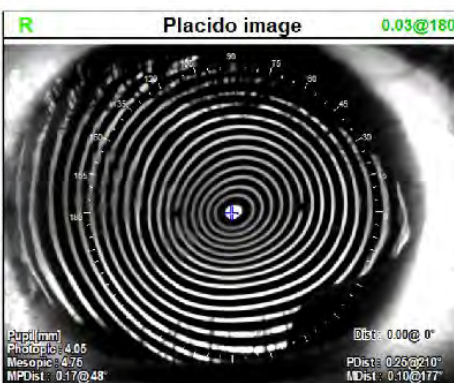
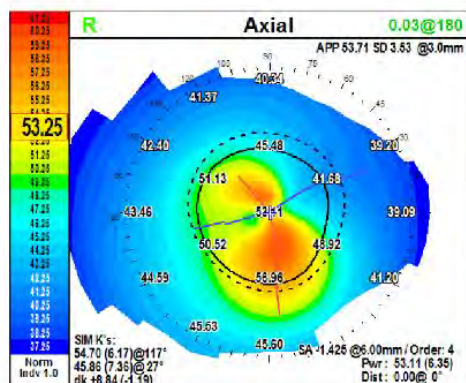
Case #8: 30 YO Severe Keratoconus OU intolerant of glasses/reduced tolerance Scleral CL's

Uncorrected VA

- OD: 20/80

- OS: CF 3 ft

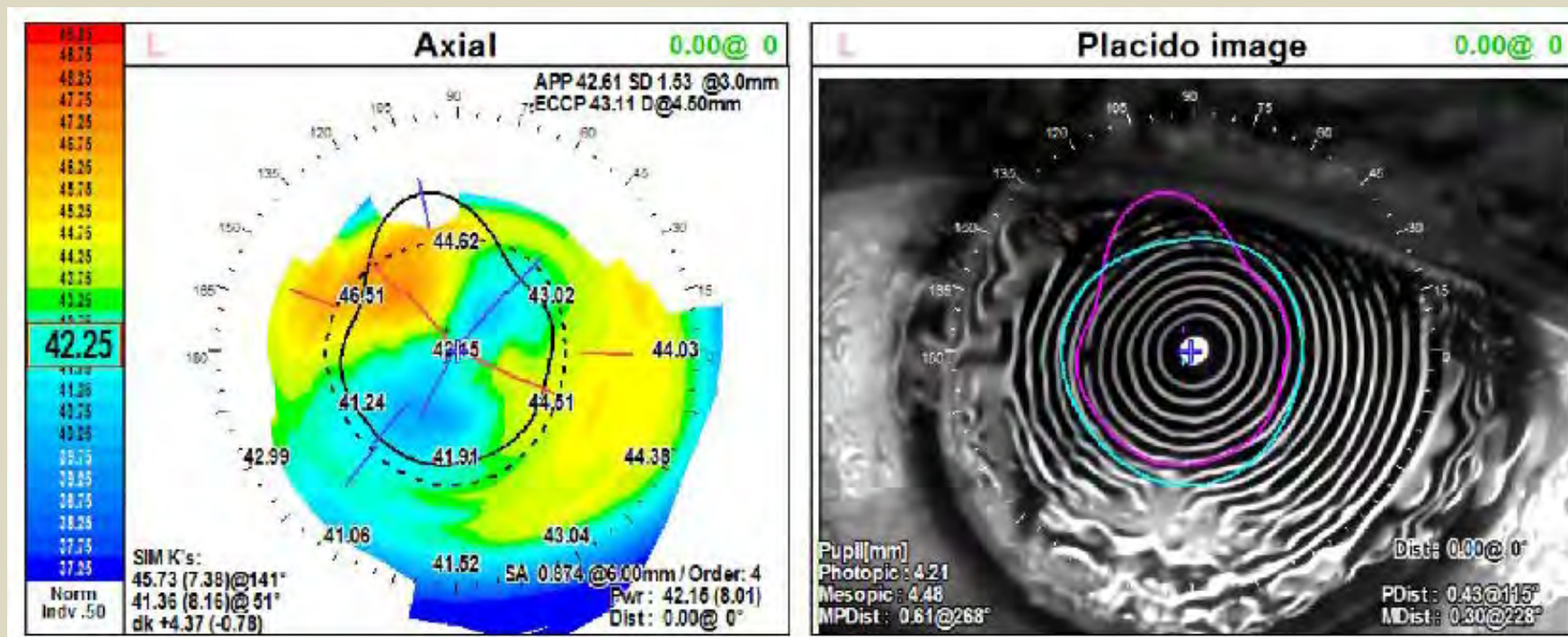
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R	09/11/2023 13:06		R		R



SimK Sheep SimK Flat dk SA@6.0mm Pupil

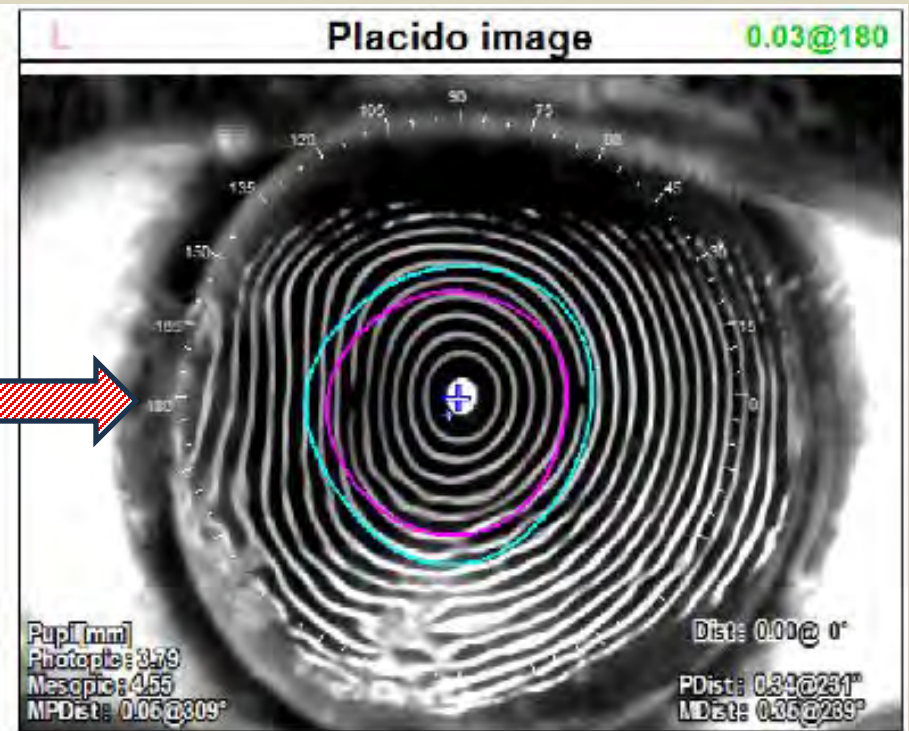
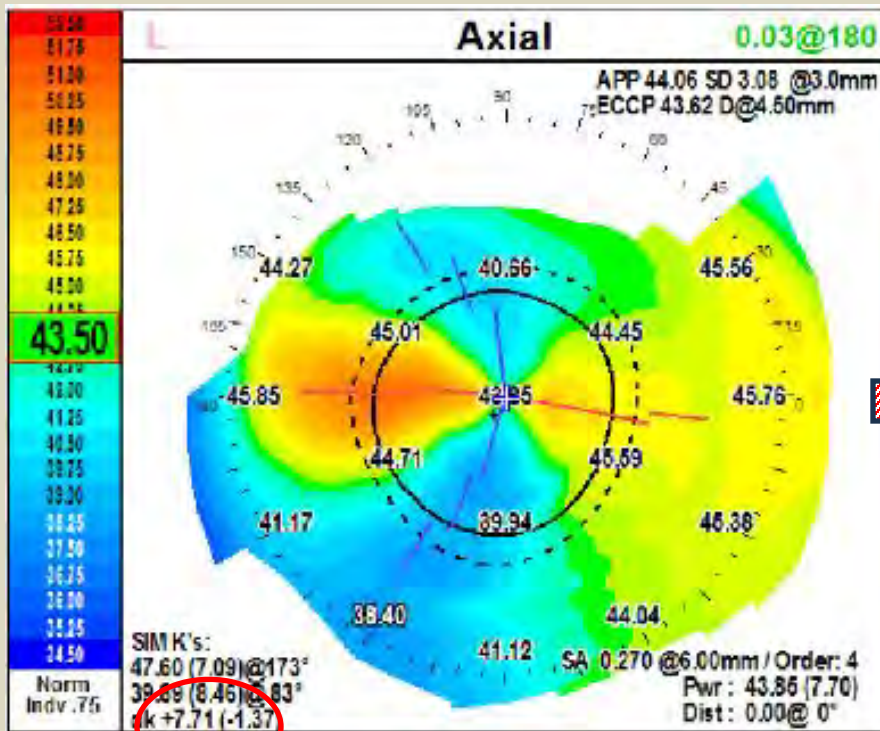
Case #8: 30 yo fm Severe Keratoconus OU

9/2024 OS: Topography below -2.5+3.5 x 145 20/40 running suture “in”
12/2023 DALK OS: 9.5mm bed/9.75mm donor laterality matched, nasal marked, big bubble dissection



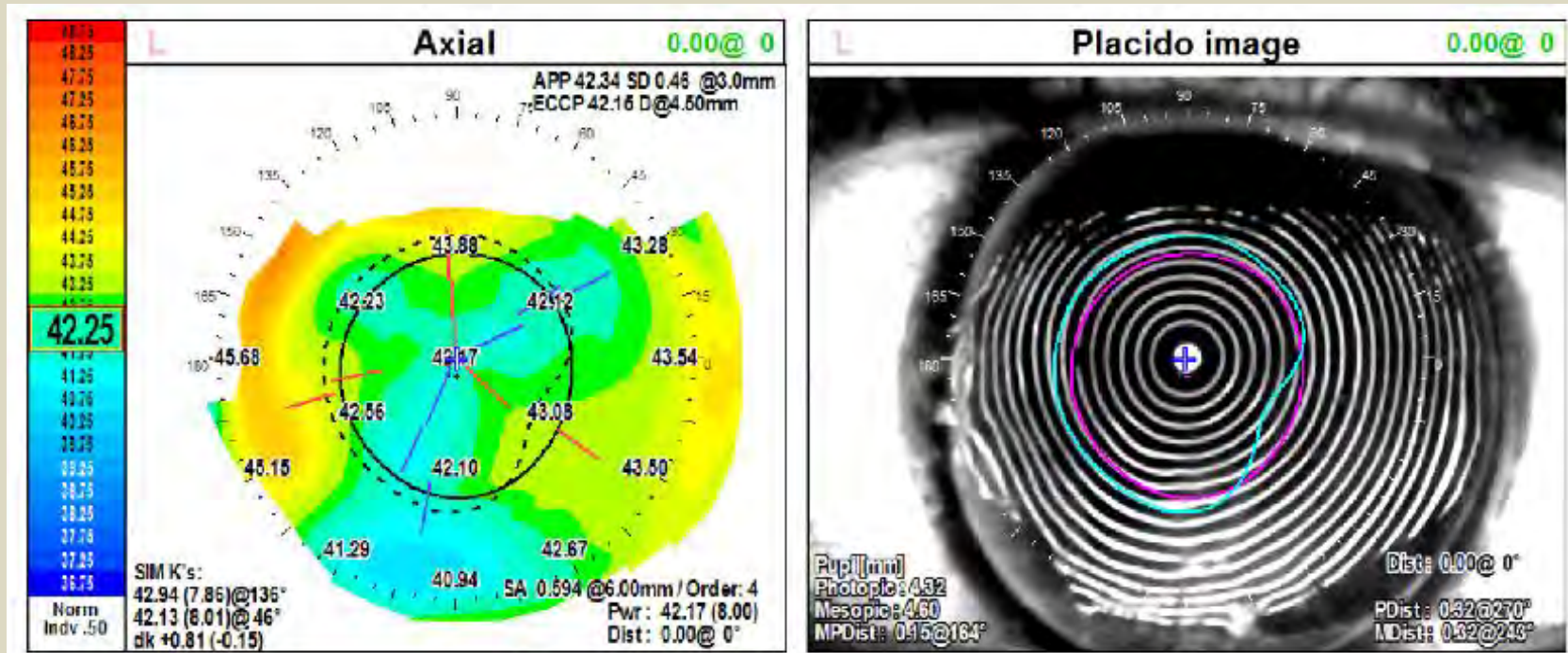
Case #8: 30 yo fm Severe Keratoconus OU

- 10/2024 OS: -5.5 +7.25 x 177 20/30 suture "out" note: nasal compression and high astigmatism in this quadrant
- 12/2023 DALK OS



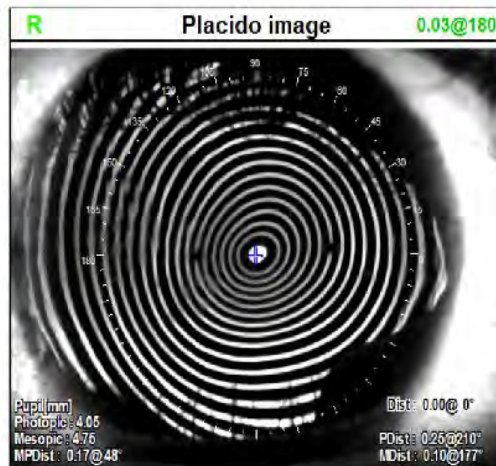
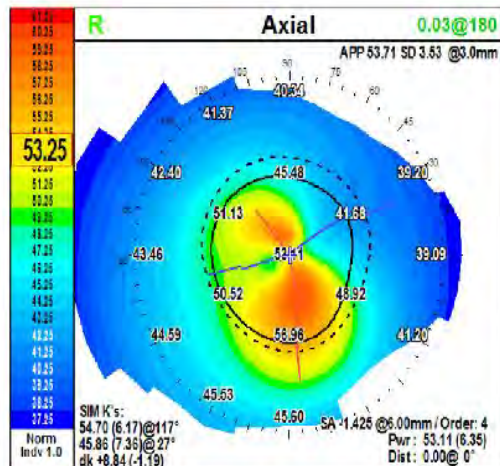
Case #8: 31 yo fm Severe Keratoconus OU

- 1/20/2025 uncorrected VA 20/25-3 !!
- 1/6/2025 Astigmatic Keratotomy: nasal scleral tunnel w interrupted 10-0 nylon sutures superior/inferior
- 12/2023 DALK OS



Case #9: 33 YO Male Firefighter/Paramedic Severe Keratoconus OU intolerant of glasses/ decreased tolerance Scleral CL's

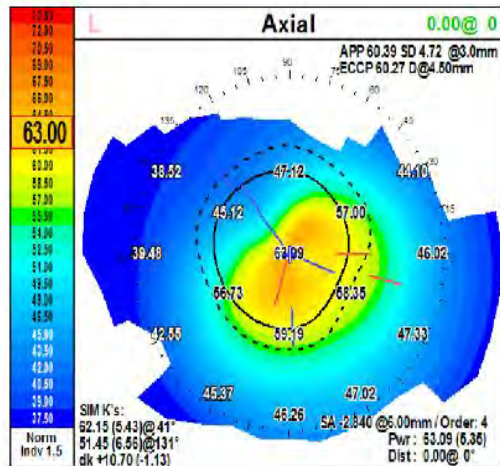
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R	09/11/2023 13:06		R		R



Uncorrected VA

OD: 20/300

-18.5+5.75x80 20/150



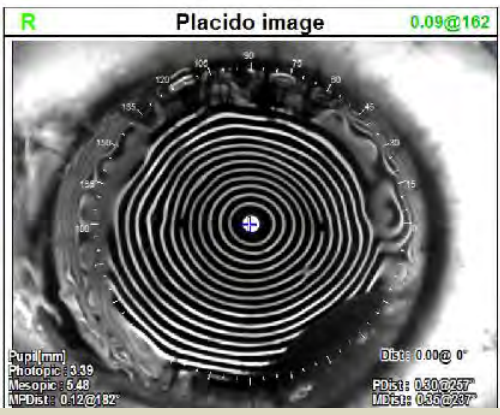
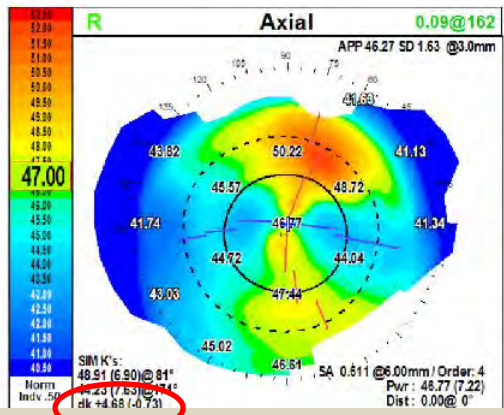
• **OS: 20/200**

Case #9: 33 YO Severe Keratoconus OU

2/11/2025 OD: adjust running suture under intraoperative keratometer

12/17/2024 OD: DALK 9.5mm bed/9.5mm donor

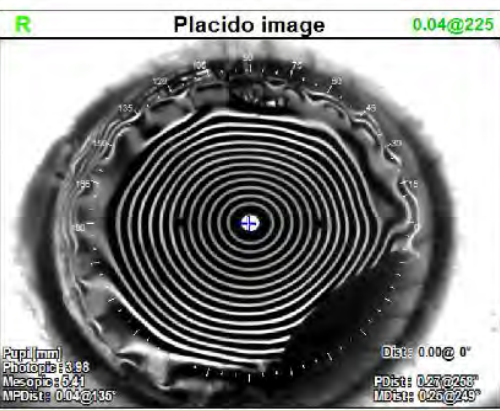
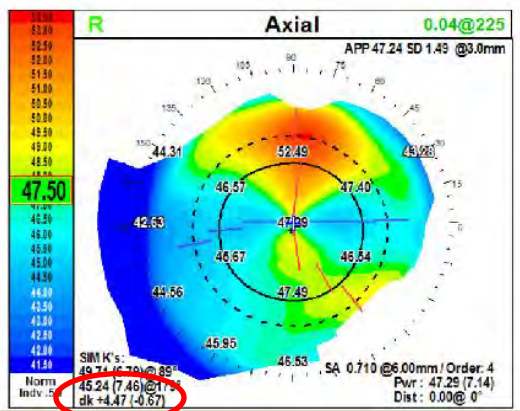
R	01/17/2025 09:49	Comment	R	Diagnosis	R
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1/17/2025
 OD: Uncorrected VA 20/200
 -8.0+5.75x80 20/20



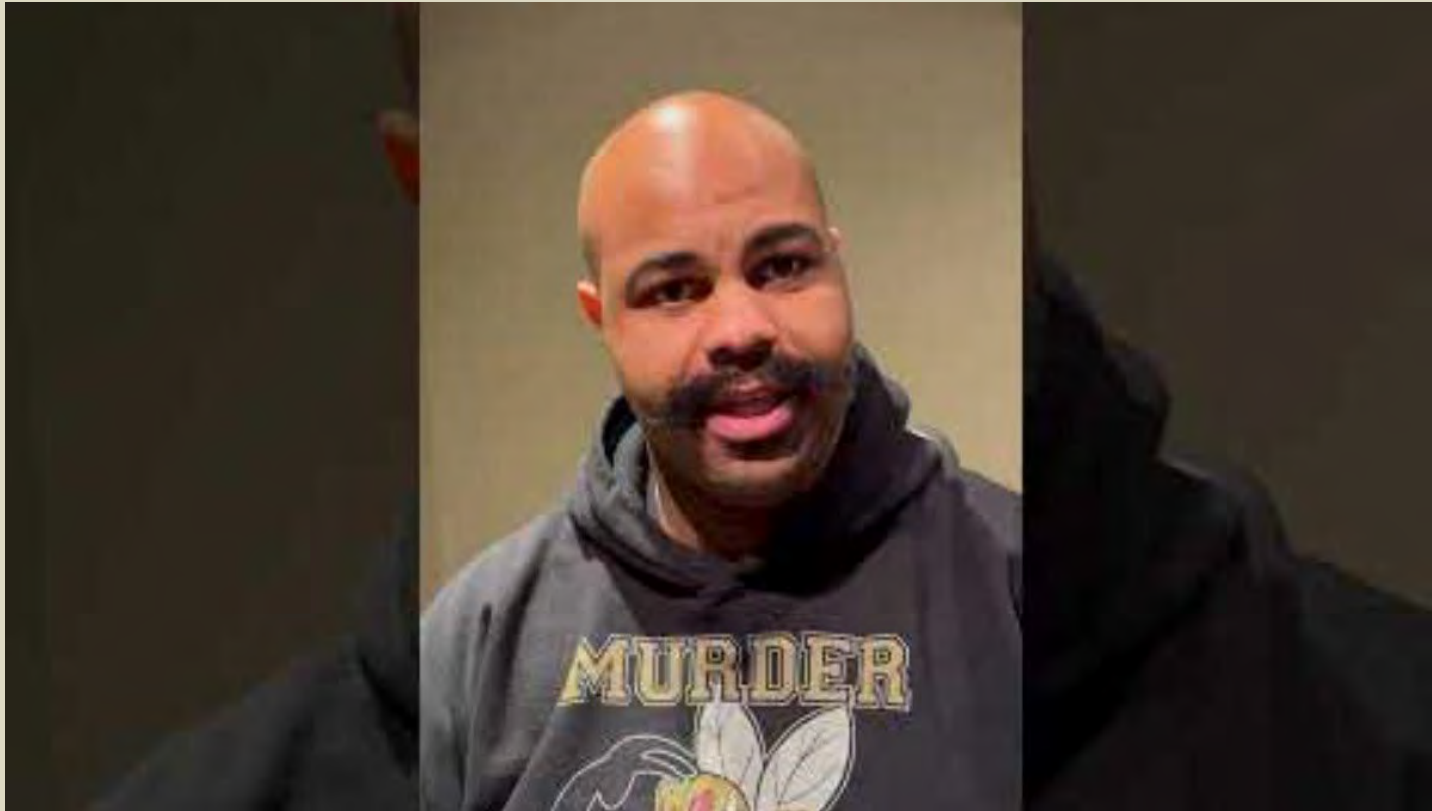
R	02/21/2025 11:12	Comment	R	Diagnosis	R
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2/21/2025
 After suture adjustment:
 OD: 20/200
 -9.0+4.0x90 20/20
 Referred for soft CL fit OD

PLAN: DALK LEFT EYE

Case #9: **Testimonial:** 33 yo man with Severe Keratoconus OU
2/11/2025 OD: adjust running suture under intraoperative keratometer
12/17/2024 OD: DALK 9.5mm bed/9.5mm donor



<https://youtube.com/shorts/SZK02KWD6pM>