

Case 2

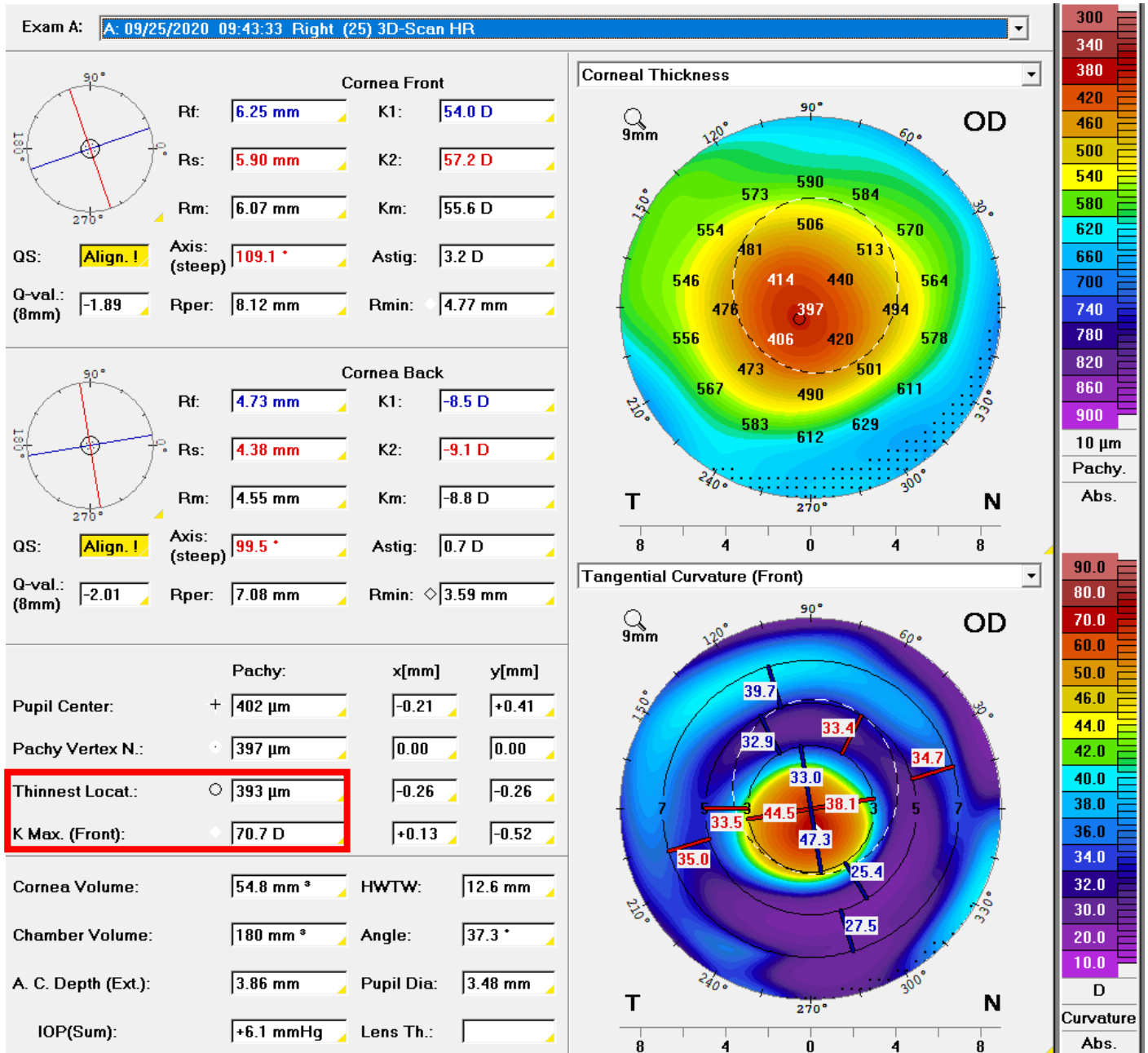
29-year-old Male

Date	Clinical details	Description
Sept 2020	<i>Reason for appointment + Ocular History</i>	<ul style="list-style-type: none">• Referred by another local optometrist for contact lenses.• Previously worn spectacles, but not since getting corneal cross-linking last year.• Stargardts disease. Under care of ophthalmologist for 2 yearly reviews. Has been stable for past 3 years.
	<i>Unaided vision</i>	R CF@1m, L CF@30cm
	<i>Pachymetry</i>	R 393 microns, L 405 microns
	<i>Corneal topography</i>	See over
	<i>Posterior Ocular health</i>	See over
	<i>Management</i>	<ul style="list-style-type: none">• Discussed visual potential with scleral lenses.

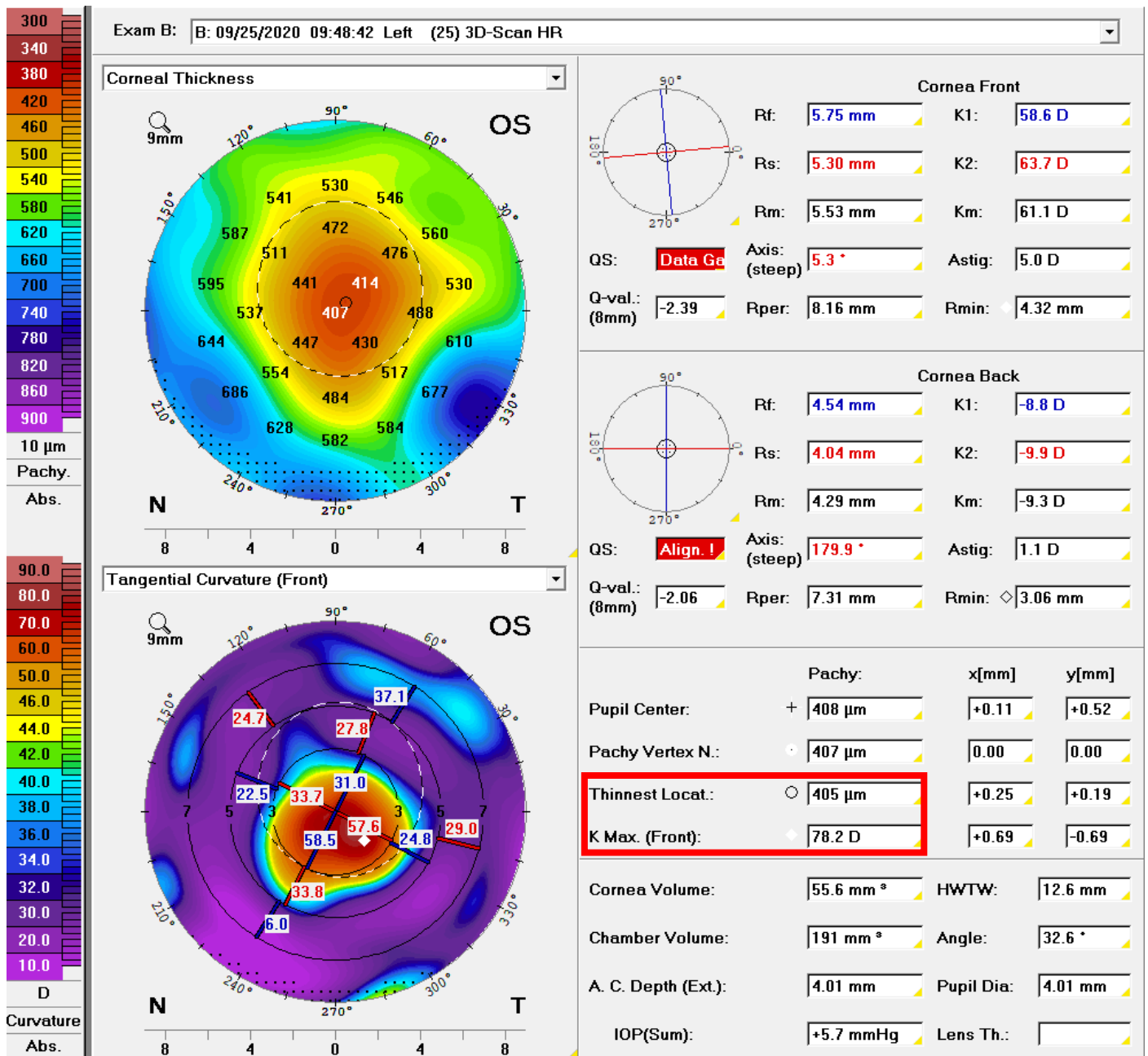
Discussion questions

1. How would you describe this patients keratoconus?
2. What refractive options would be available to this patient?
3. What other clinical investigations would you carry out for this patient?
4. Have you seen any patients similar to this case in your own clinical experience?

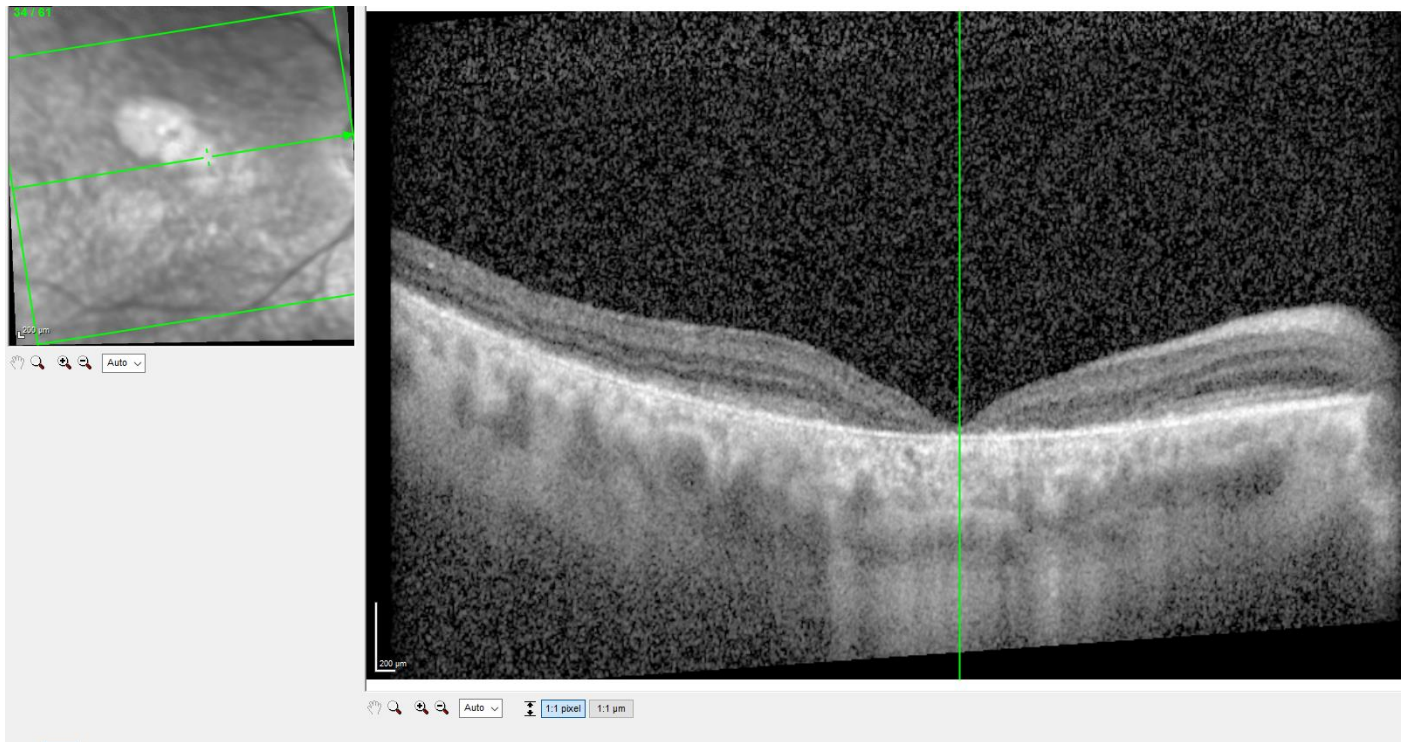
R: Sept 2020, Ocular Tomography



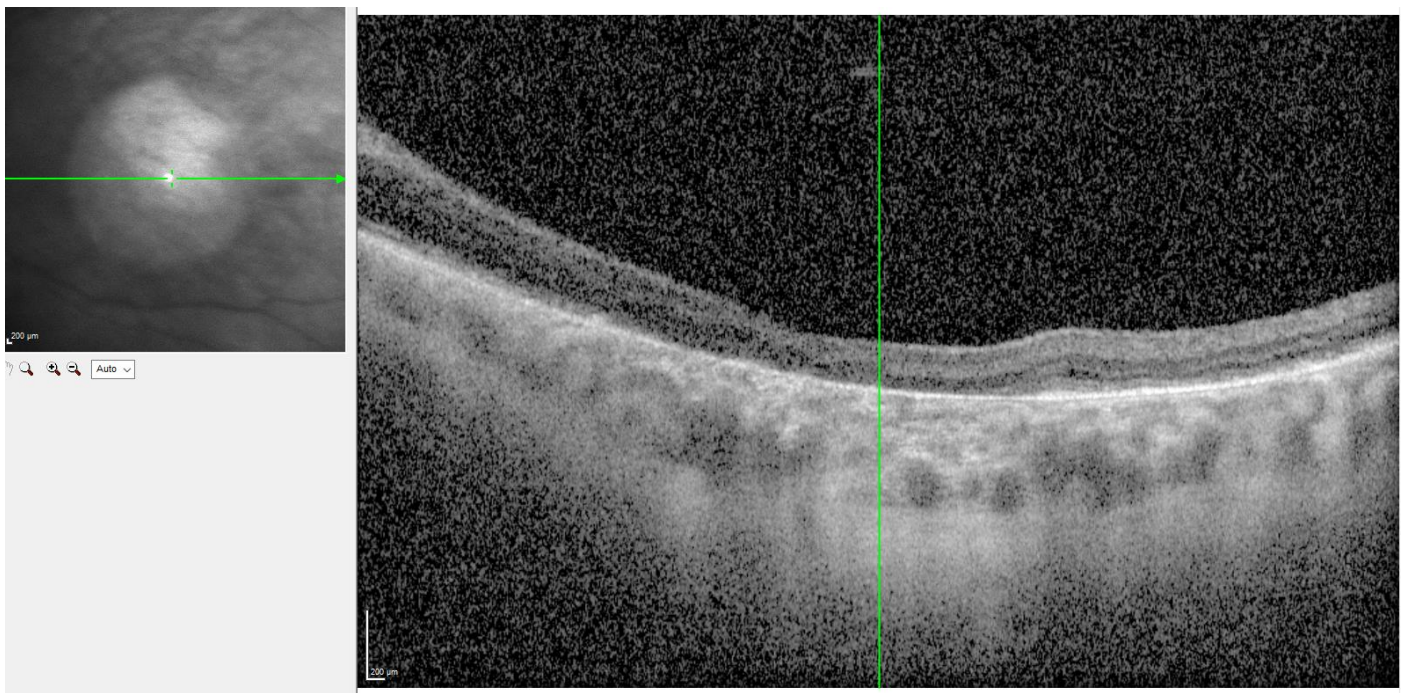
L: Sept 2020, Ocular Tomography



R: Sept 2020, Macula OCT



L: Sept 2020, Macula OCT

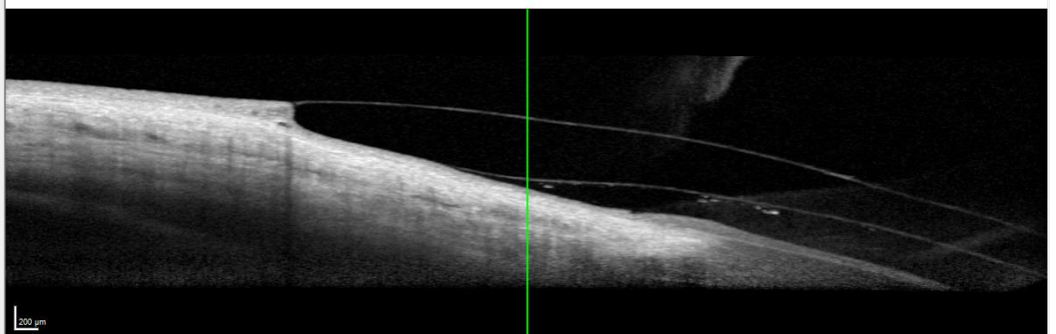
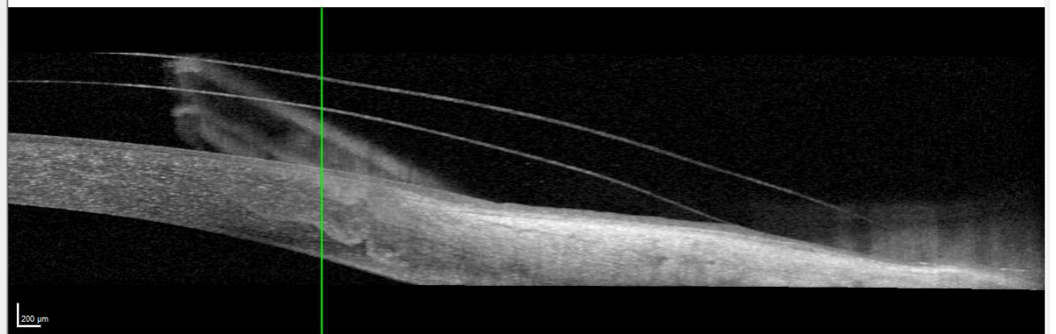
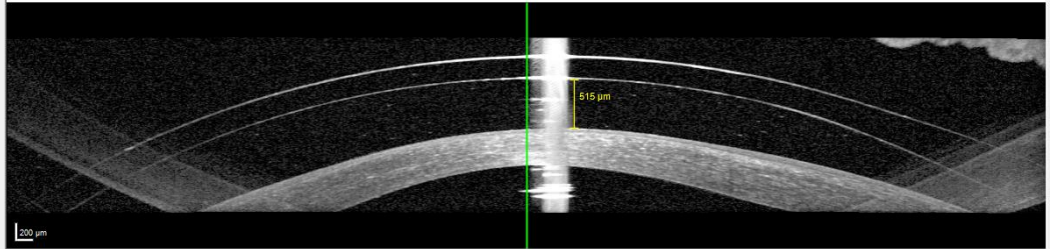
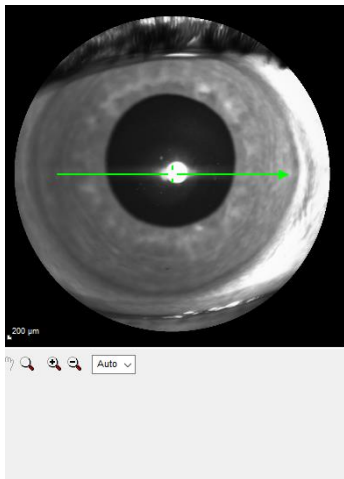


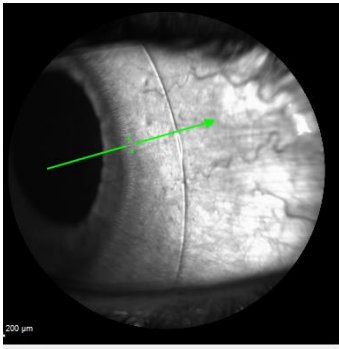
Date	Clinical details	Description
Oct 2020	<i>Reason for appointment + Ocular History</i>	<ul style="list-style-type: none"> Scleral lens trial fitting
	<i>Trial lenses</i>	<p>Right eye: EyeSpace trial lens 2 7.90/ 3900/ 39/ 17.50 (flat axis) 7.90/ 4050/ 40/ 17.50 (steep axis) BVP = -2.00D</p> <p>Left eye: EyeSpace trial lens 6 7.50/ 4100/ 40/ 17.50 (flat axis) 7.50/ 4350/ 41/ 17.50 (steep axis) BVP = -3.00D</p> <p><i>Note: lens parameters written in following notation BOZR (mm)/ SAG@15mm (microns)/ SLZ ($^{\circ}$)/ Diameter (mm)</i></p>
	<i>Refraction over lens</i>	R +1.75/-1.25x43 (6/38+) L +2.00/-2.25x94 (6/60)
	<i>OCT of trial lens</i>	See over

Discussion questions:

1. How do you go about selecting a scleral trial lens?
2. Which parameters of the trial lens do you need to assess to calculate the final lens?
3. What would you adjust from the trial lens fit?

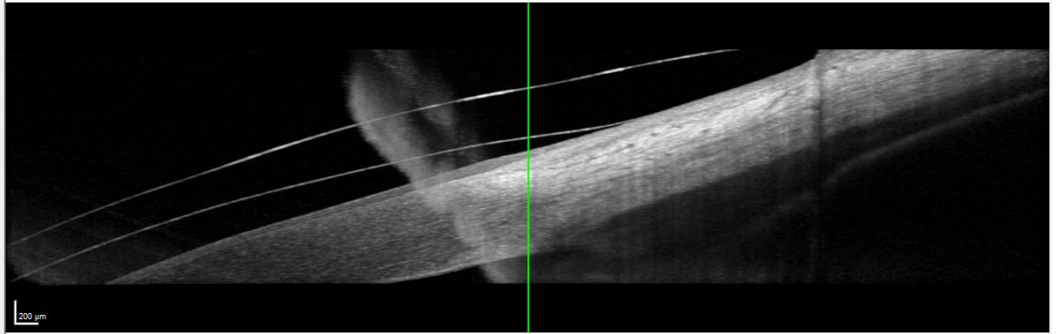
Right eye trial fitting: anterior OCT



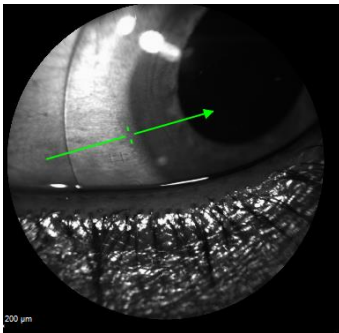


200 μ m

Auto

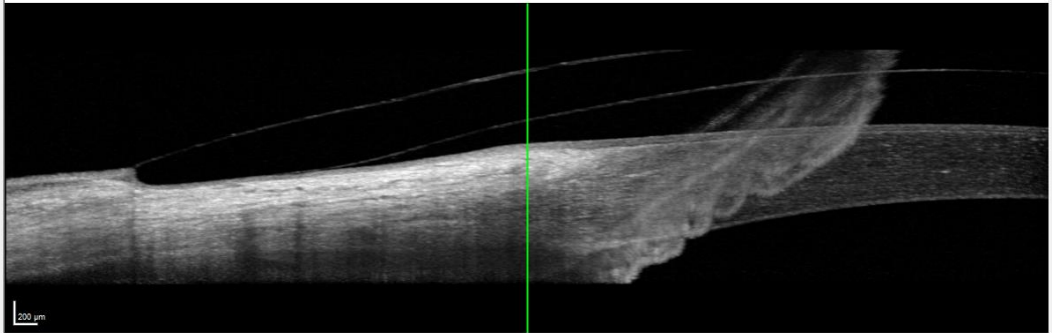


200 μ m



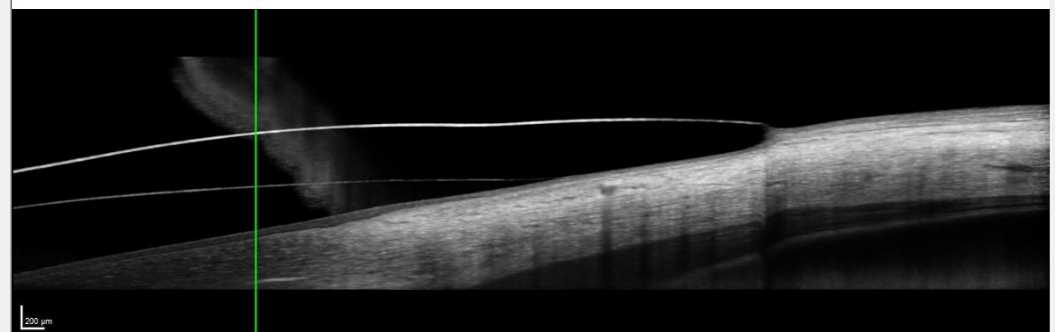
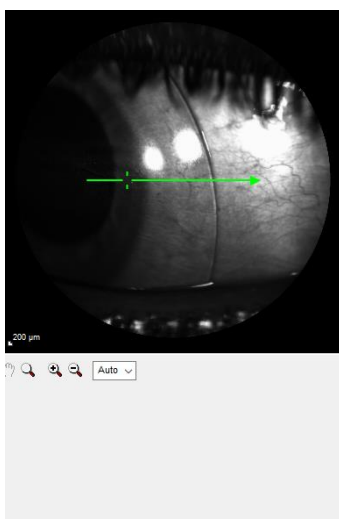
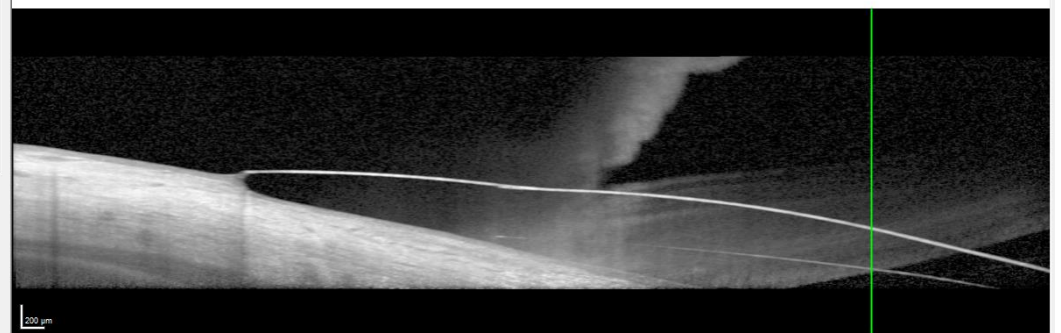
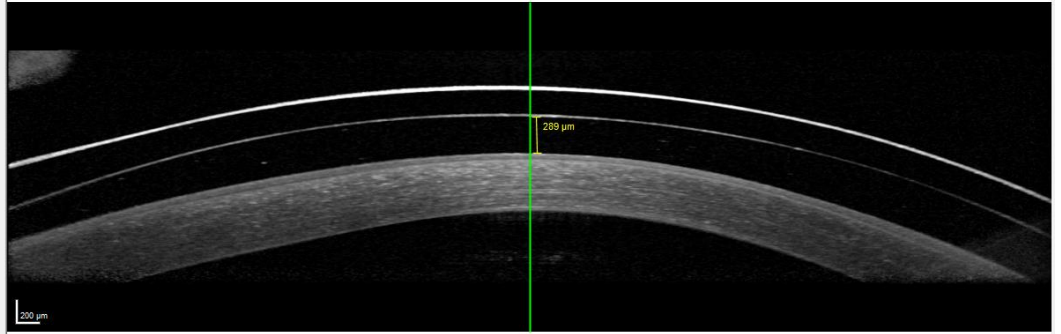
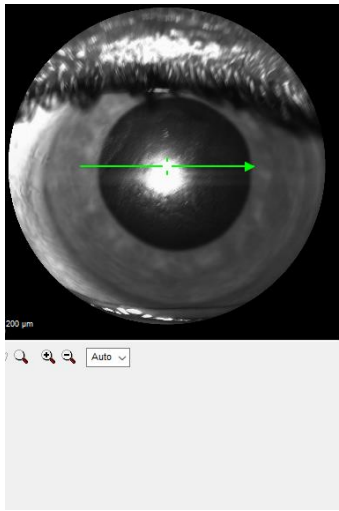
200 μ m

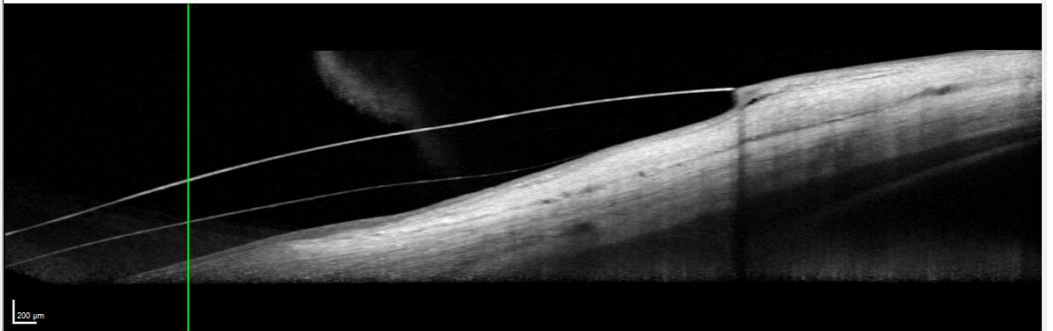
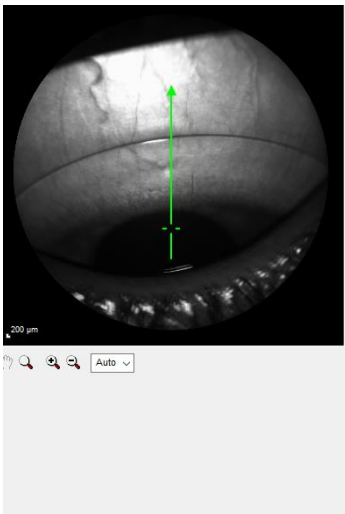
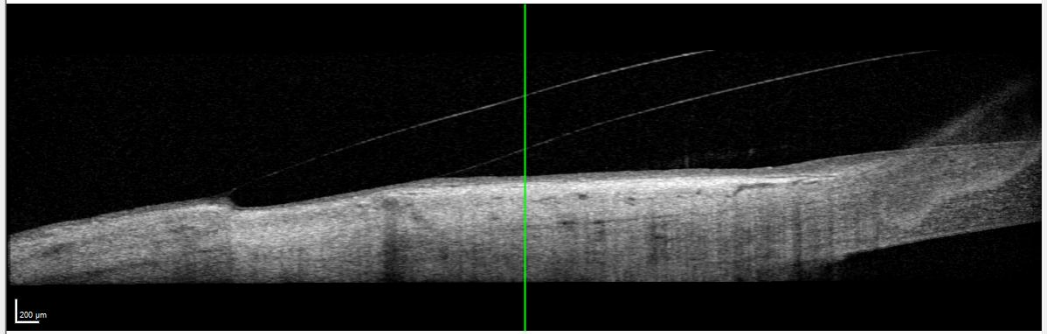
Auto



200 μ m

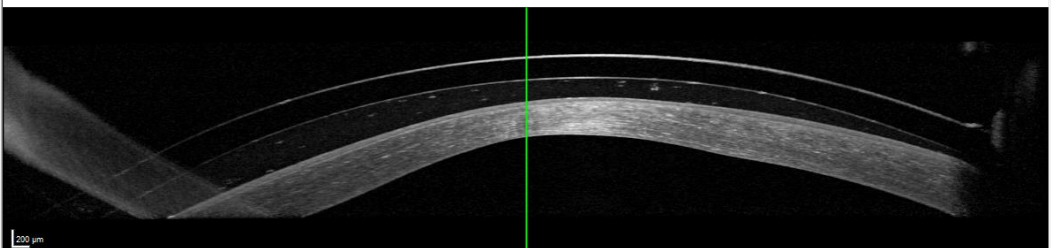
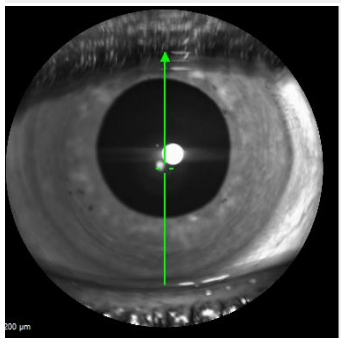
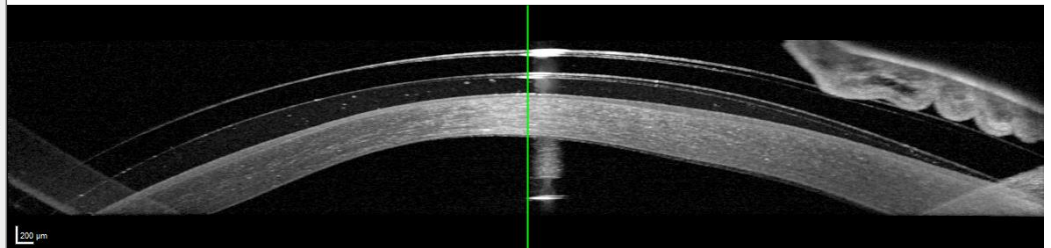
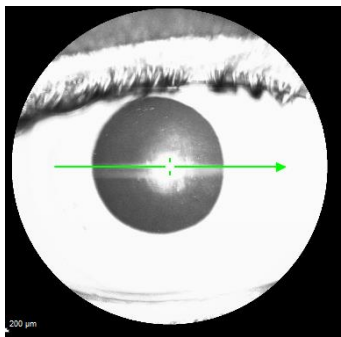
Left eye trial fitting: anterior OCT

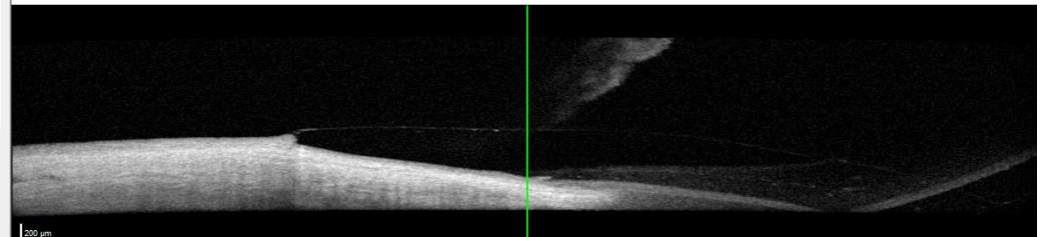
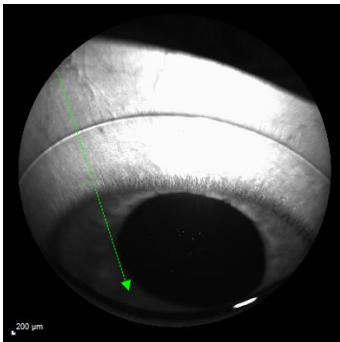
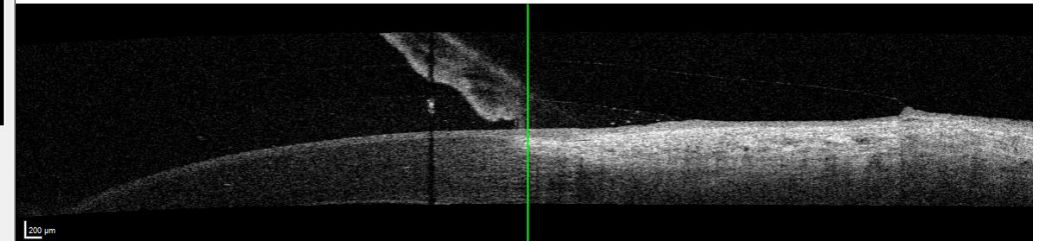
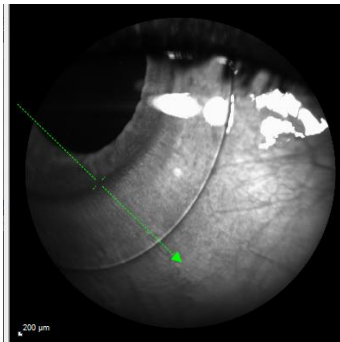
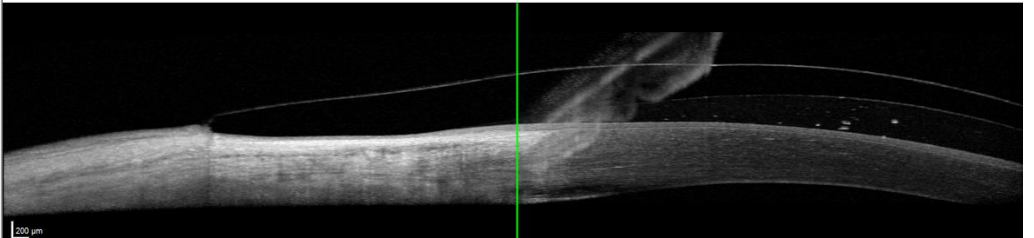
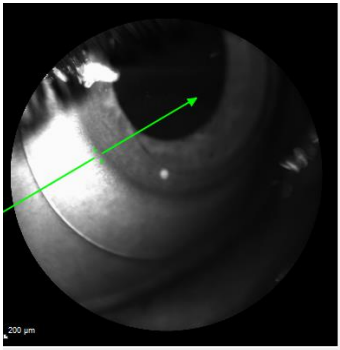
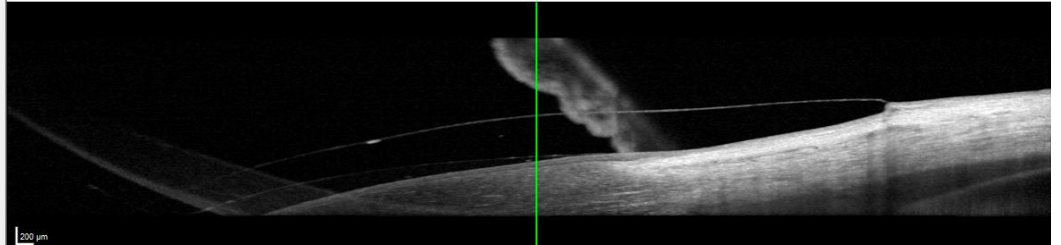
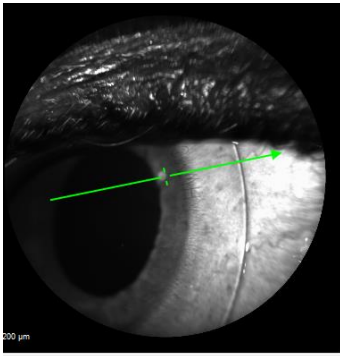




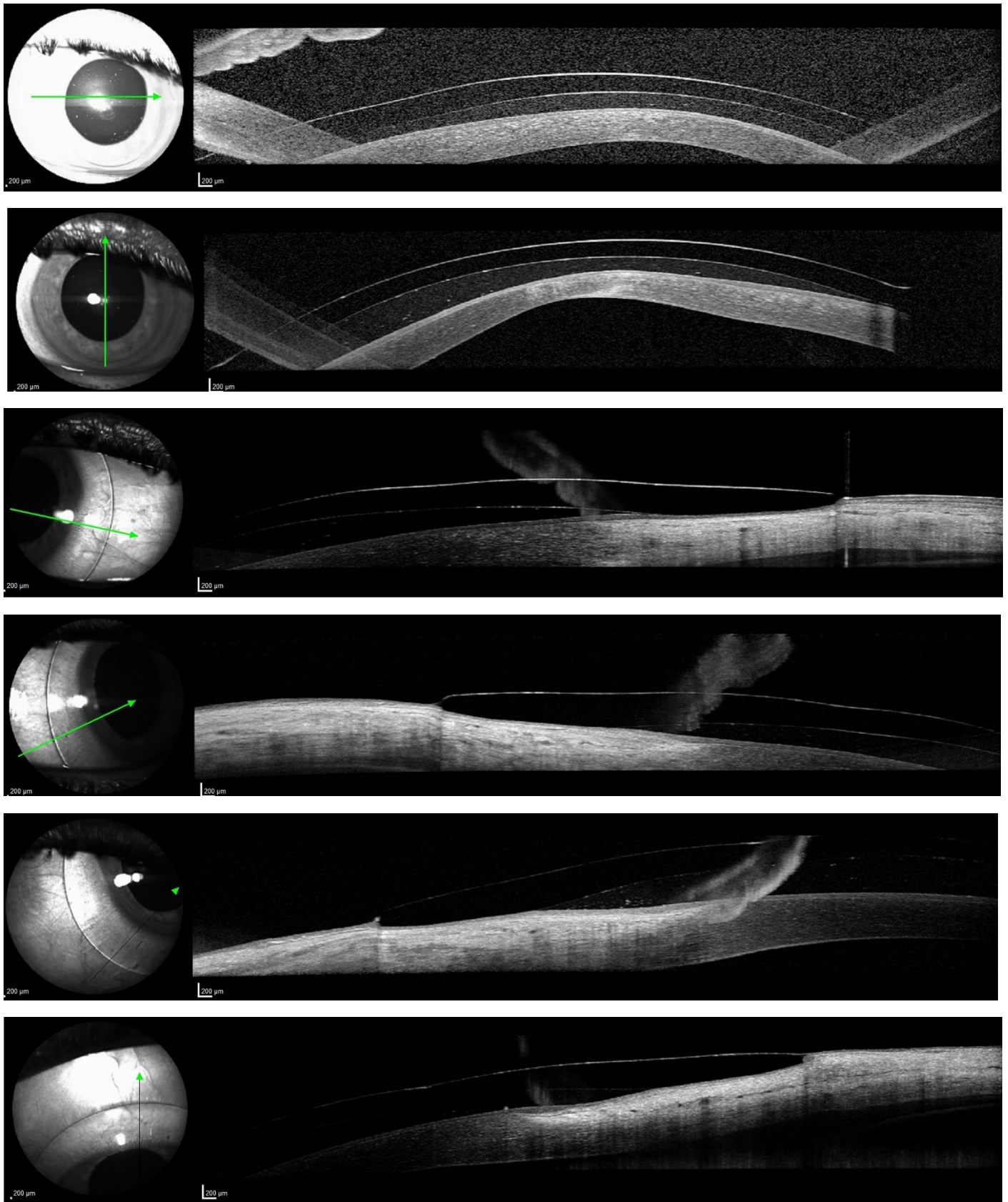
Date	Clinical details	Description
Nov 2020	<i>Reason for appointment + Ocular History</i>	<ul style="list-style-type: none"> Scleral lens delivery
	<i>Lens parameters</i>	<p>Right lens:</p> <p>7.2/ 3900/ 37/ 17.0</p> <p>7.2/ 4050/ 38/ 17.0</p> <p>BVP = -4.50/-1.25 x 112</p> <p>Left lens:</p> <p>6.7/ 3950/ 38/ 17.0</p> <p>6.7/ 4250/ 40/ 17.0</p> <p>BVP = -6.250/-2.00 x 19</p> <p><i>Note: lens parameters written in following notation</i> <i>BOZR (mm)/ SAG@15mm (microns)/ SLZ ($^{\circ}$)/ Diameter (mm)</i></p>
	<i>Refraction over lens</i>	<p>R -0.75/-0.50 x 159 6/38</p> <p>L pl/-0.75x169 6/60</p>
	<i>OCT of lens</i>	See below

Right eye: lens on eye at delivery





Left eye: lens on eye at delivery



Case 3

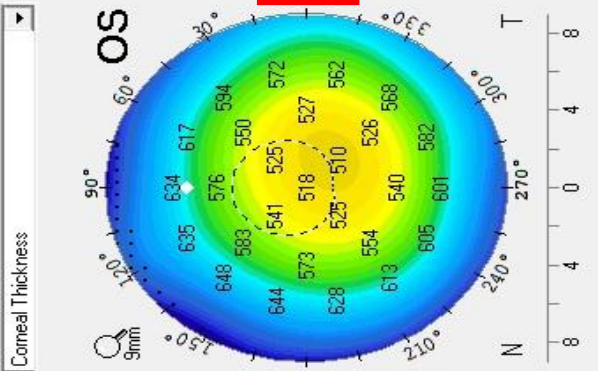
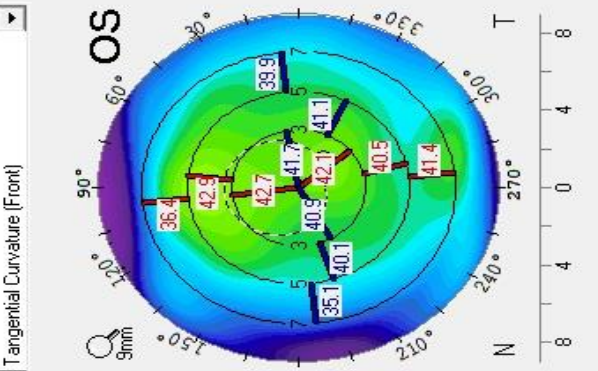
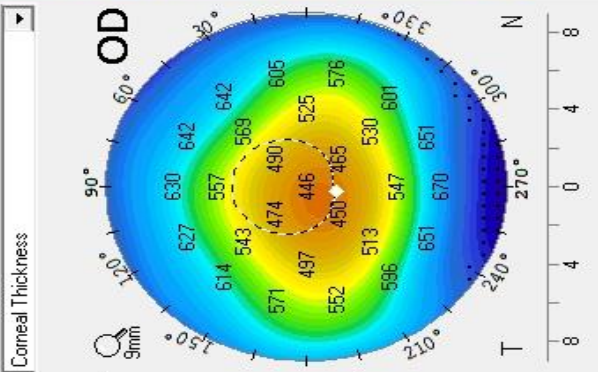
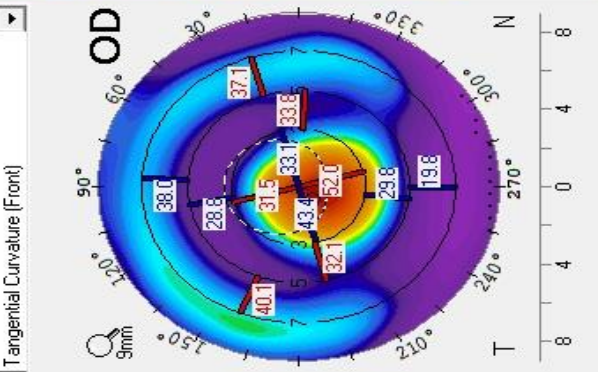
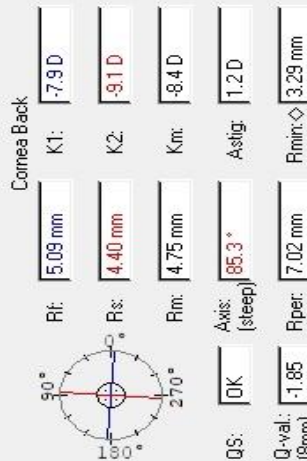
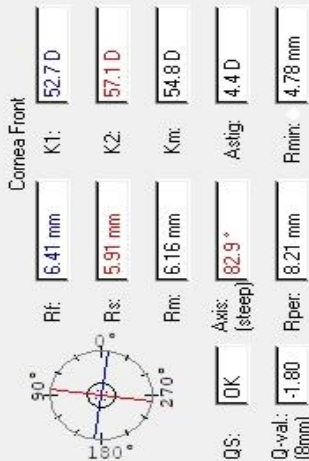
20-year-old, Male, Electrician

Date	Clinical details	Description
July 2021	<i>Reason for appointment + Ocular History</i>	<ul style="list-style-type: none">• Primary complaint: blurry vision in right eye. First noticed 6 months ago. Progressively getting worse.• Nil trauma, surgery, or infection.• Last eye exam ~5 years ago.• Nil medications.• (+) Hayfever and dust allergies.
	<i>Unaided vision</i>	R 6/120, L 6/4
	<i>Spectacle refraction</i>	R pinholes to 6/20 L +0.25DS (6/4)
	<i>Pachymetry</i>	R 441 microns, L 510 microns
	<i>Corneal topography</i>	See over
	<i>Posterior Ocular health</i>	Unremarkable
	<i>Management</i>	<ul style="list-style-type: none">• Educated regarding eye-rubbing and natural history of keratoconus.• Referral for corneal cross linking.• Return after cross linking for rigid lenses.

Discussion questions

- What is your DDX for this patient's presenting complaint?
- How would you describe this patient's tomography scans?
- Would you refer for corneal cross linking at this presentation or would you monitor for progression prior to referring?
- What are the refractive options for this patient? What considerations do you need to make regarding binocular vision?

Exam A: A: 07/05/2021 15:42:44 Right [50] 3D-Scan HR



Exam B: B: 07/05/2021 15:38:41 Left [50] 3D-Scan HR

Cornea Front

Rf:	8.09 mm	K1:	41.7 D
Rs:	7.98 mm	K2:	42.3 D
Rm:	8.03 mm	Km:	42.0 D
Axis: (steep)	108.1°	Astig:	0.6 D
Qs:	[OK]	Rper:	7.91 mm
Q-val: (8mm)	-0.38	Rmin:	7.91 mm

Cornea Back

Rf:	6.70 mm	K1:	-6.0 D
Rs:	6.45 mm	K2:	-6.2 D
Rm:	6.57 mm	Km:	-6.1 D
Axis: (steep)	100.6°	Astig:	0.2 D
Qs:	[OK]	Rper:	6.83 mm
Q-val: (8mm)	-0.39	Rmin:	6.23 mm

Pupil Center:	+ 517 μm	x(mm)	+0.18	y(mm)	+0.03
Pachy Vertex N.:	518 μm	x(mm)	0.00	y(mm)	0.00
Thinnest Locat.:	510 μm	x(mm)	+0.80	y(mm)	-0.53
K Max. (Front):	42.7 D	x(mm)	0.00	y(mm)	+2.66

Cornea Volume:	58.3 mm ³	HW/TW:	12.5 mm
Chamber Volume:	160 mm ³	Angle:	33.4°
A. C. Depth (Ext.):	3.55 mm	Pupil Dia:	2.78 mm
IOP(Sum):	+1.3 mmHg	Lens Th.:	

900
800
700
600
500
450
440
420
400
380
360
340
320
300
200
100
D

300
340
380
420
460
500
540
580
620
660
700
740
780
820
860
900
10 μm
Pachy.
Abs.

OCULUS - PENTACAM Topometric/KC-Staging

1.26603



Cornea Front

Rf: 6.41 mm K1: 52.7 D
 Rs: 5.91 mm K2: 57.1 D
 Rm: 6.16 mm Km: 54.8 D
 Axis: 82.9° Astig: 4.4 D
 Qs: OK Q-val: -1.80 (8mm) Rper: 8.21 mm Rmin: 4.78 mm

Cornea Back

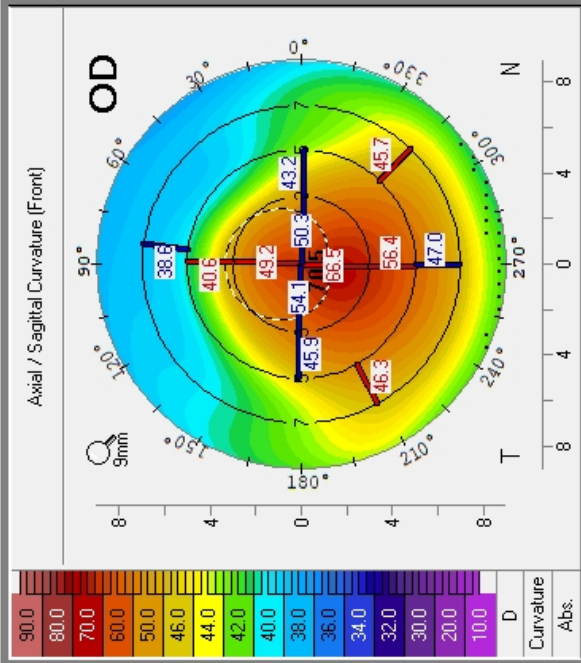
Rf: 5.09 mm K1: -7.9 D
 Rs: 4.40 mm K2: -9.1 D
 Rm: 4.75 mm Km: -8.4 D
 Axis: 85.3° Astig: 1.2 D
 Qs: OK Q-val: -1.85 (8mm) Rper: 7.02 mm Rmin: < 3.29 mm

True Net Power

Astig: 4.7 D K1: 51.5 D
 Axis: 82.9° (stp.) K2: 56.2 D
 P.Max: 66.5 D Km: 53.9 D

Pachy: x[mm] y[mm]
 Pupil Center: + 462 μm -0.01 +0.52
 Pachy Vertex N.: 446 μm 0.00 0.00
 Thinnest Locat.: 441 μm -0.33 -0.33
 K Max. (Front): 70.5 D -0.13 -0.65

Cornea Volume: 58.4 mm³ Hw/TW: 12.5 mm
 Chamber Volume: 151 mm³ Angle: 38.6°
 A. C. Depth (E.x.): 3.59 mm Pupil Dia: 2.39 mm
 IOP(Sum): +4.2 mmHg Lens Th.:



Belin ABCD Keratoconus Staging

ARC (3mm Zone): 5.54 mm
 PRC (3mm Zone): 4.07 mm
 Thinnest Pachy: 441 μm
 DCVA:

A4+B4+C2 D

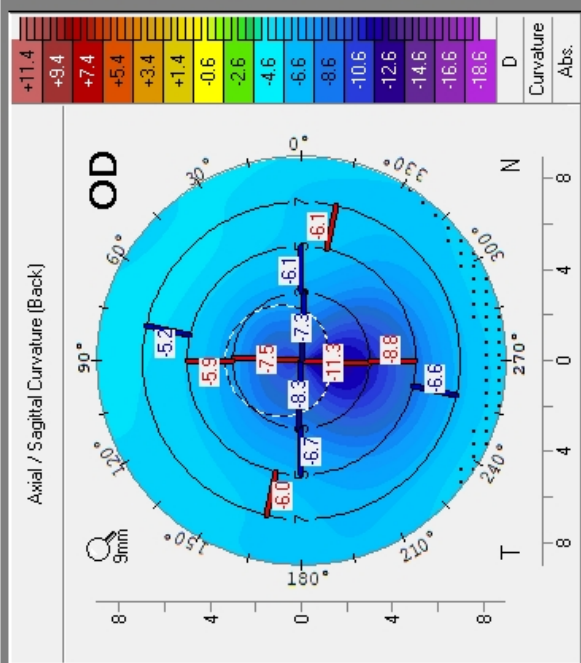
Bar chart showing stages: A (4+), B (4+), C (2.8), D (0)

Indices (in 8mm zone)

ISV: 145 IHA: 50.1
 IVA: 1.30 IHD: 0.246
 KI: 1.42 RMin: 4.78
 CKI: 1.24 TKC: KC 3.4
 KISA: 15838.3 IS: 9.70

Asphericity (Front) at 8mm

Hor.: -1.61
 Vert.: -1.99



Asphericity (Front) of Major Meridians

(Q-val.)	6mm	7mm	8mm	9mm	10mm
Nas	-2.34	-1.82	-1.54	-1.44	-1.39
Temp	-2.72	-2.13	-1.69	-1.39	-1.23
Inf	-2.40	-2.40	-2.28	-2.13	-1.96
Sup	-3.06	-2.25	-1.69	-1.35	-1.10
Mean	-2.63	-2.15	-1.80	-1.58	-1.42

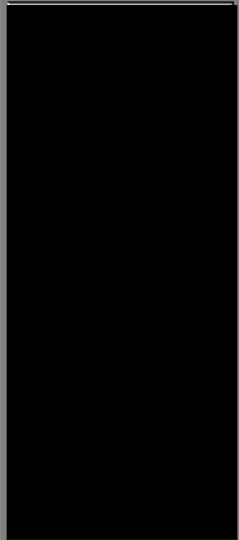
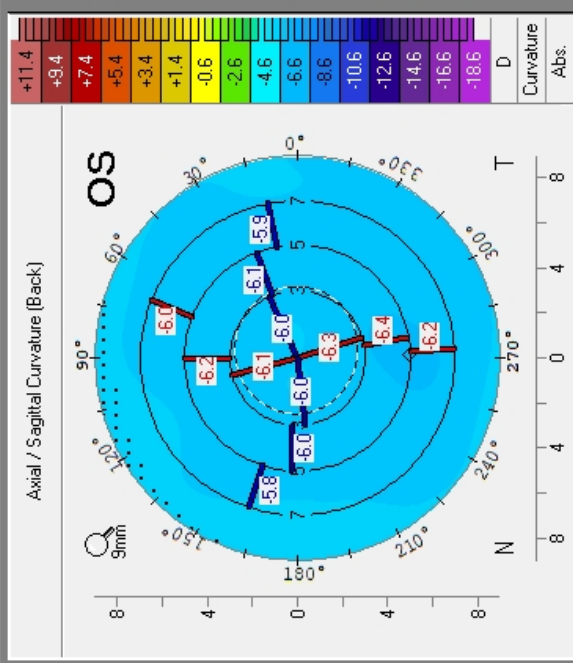
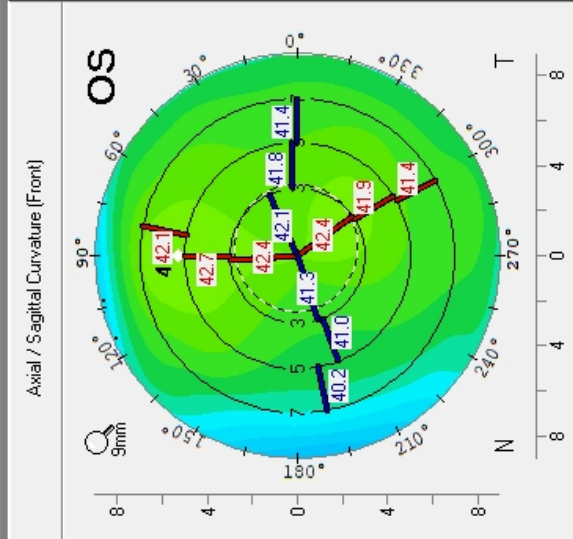
Front: Asphericity Axial/Sag. Curva
 Back: Asphericity Axial/Sag. Curva

Spot locations in 8mm zone (polar coordinates)

Pupil Center: + 0.52mm (91.1°)
 Thinnest Locat.: 0.45mm (225.0°)
 K Max. (Front): 0.67mm (258.7°)

OCULUS - PENTACAM Topometric/KC-Staging

1.26803



Cornea Front

Rf: 8.09 mm
Rs: 7.98 mm
Rm: 8.03 mm
Axis: 108.1° (steep)
OK

K1: 41.7 D
K2: 42.3 D
Km: 42.0 D
Astig: 0.6 D
Rmin: 7.91 mm

Cornea Back

Rf: 6.70 mm
Rs: 6.45 mm
Rm: 6.57 mm
Axis: 100.6° (steep)
OK

K1: -6.0 D
K2: -6.2 D
Km: -6.1 D
Astig: 0.2 D
Rmin: 6.23 mm

True Net Power

Astig: 0.5 D
Axis: 112.0° (stp.)
P.Max.: 41.4 D

K1: 40.5 D
K2: 41.0 D
Km: 40.7 D

Pachy: x[mm] y[mm]

Pupil Center: + 517 μm +0.18 +0.03

Pachy Vertex N.: 518 μm 0.00 0.00

Thinnest Locat.: 510 μm +0.80 -0.53

K Max. (Front): 42.7 D 0.00 +2.66

Cornea Volume: 58.3 mm³ HWTW: 12.5 mm

Chamber Volume: 160 mm³ Angle: 33.4°

A. C. Depth (E.x.): 3.55 mm Pupil Dia: 2.78 mm

IOP(Sum): +1.3 mmHg Lens Th.:

Belin/ABCD Keratocomus Staging

ARC (3mm Zone): 8.01 mm

PRC (3mm Zone): 6.45 mm

Thinnest Pachy: 510 μm

DCVA:

A 0.0
B 0.0
C 0.8
D

A0 B0 C0 D

Asphericity (Front) of Major Meridians

(Q-val.)	6mm	7mm	8mm	9mm	10mm
Nas	-0.40	-0.49	-0.58	-0.62	-0.62
Temp	-0.19	-0.20	-0.23	-0.26	-0.30
Inf	-0.26	-0.21	-0.24	-0.35	-0.59
Sup	-0.13	-0.29	-0.49	-0.69	-0.83
Mean	-0.25	-0.30	-0.38	-0.48	-0.59

Front:
 Asphericity
 Axial/Sag. Curva

Back:
 Asphericity
 Axial/Sag. Curva

Indices (in 8mm zone)

ISV: 15 IHA: 6.6

IVA: 0.14 IHD: 0.012

KI: 1.00 RMin: 7.91

CKI: 1.01 TKC: -

KISA: 10.733 IS: -0.56

Asphericity (Front) at 8mm

Hor.: -0.40
Vert.: -0.37

Spot locations in 8mm zone (polar coordinates)

Pupil Center: + 0.18mm (8.6°)

Thinnest Locat.: 0 0.95mm (326.3°)

K Max. (Front): 2.66mm (90.0°)