



INTERNATIONAL CONGRESS OF THE
EGYPTIAN
OPHTHALMOLOGICAL SOCIETY

In collaboration with:



MEACO
MIDDLE EAST AFRICA
COUNCIL OF OPHTHALMOLOGY

Biomechanics

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Head Of Refractive surgery unit -
Research Institute of Ophthalmology

A. Professor of Ophthalmology

The Speaker Has No Financial Interest



Do we really need biomechanical evaluation?

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KC

- ~~Progressive, non-inflammatory~~ condition, which produces a ~~thinning and steepening~~ of the cornea.
- Subclinical inflammatory disease.(Increased levels IL-6, TNF- α , and MMP-9).
- Eye rubbing, a proven risk factor for keratoconus.

KC and Post LVC Ectasia

- Biomechanical Failure!!

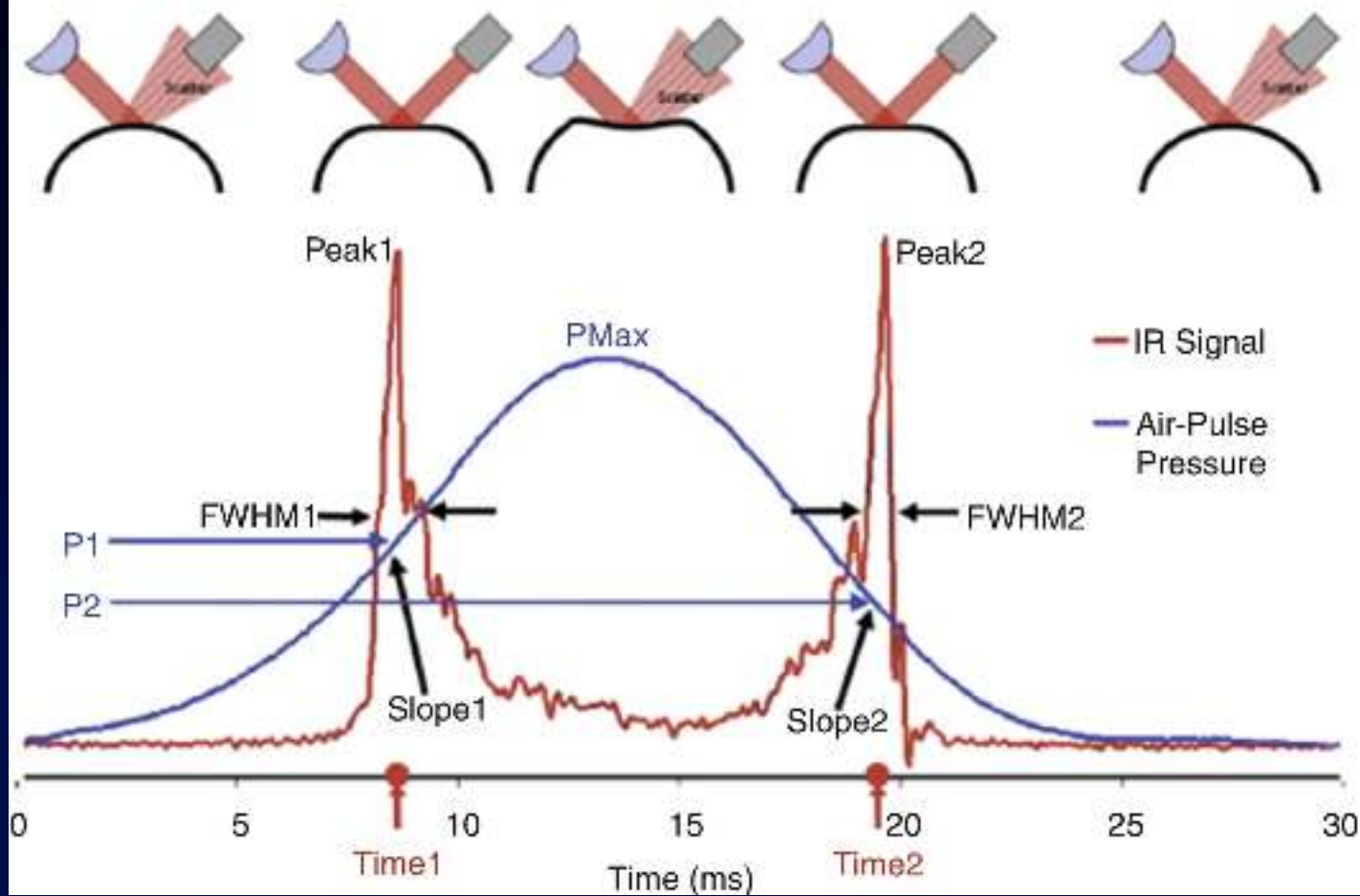
Ocular Response analyzer (ORA)



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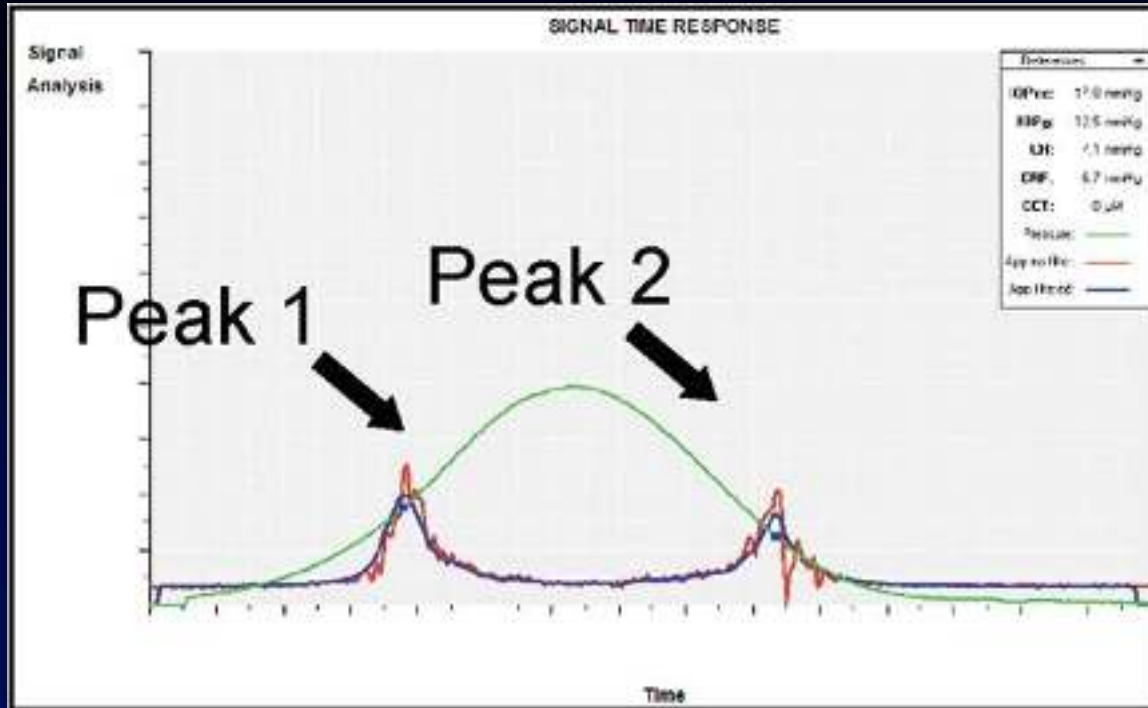
Time Course of Dynamic Bidirectional Application



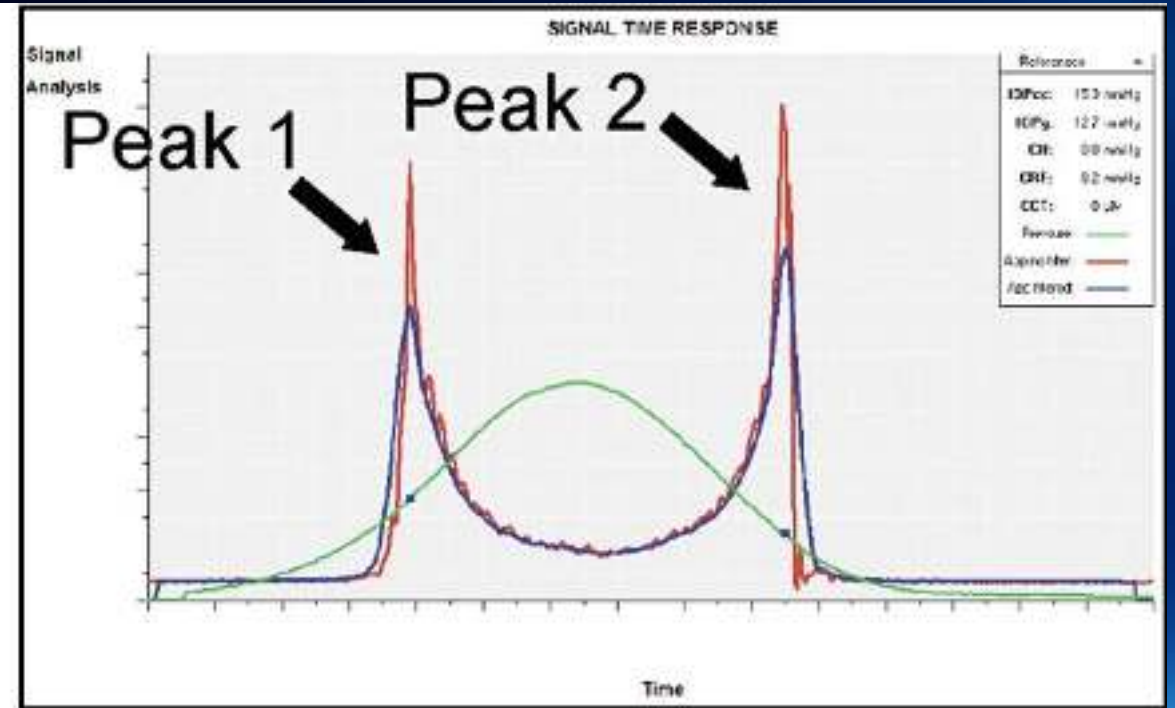
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Roberts CJ. Concepts and misconceptions in corneal biomechanics. J Cataract Refract Surg. 2014;40:862–9.



Keratoconic cornea



Normal cornea

Glass DH. Characterization of the biomechanical properties of the in vivo human cornea. PhD Dissertation, The Ohio State University; 2008.

CorVis ST

Corneal Visualization Scheimpflug Technology



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DCR



DCR
Dynamic Corneal Response
Parameters

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(UHS) Scheimpflug camera angled at 45° towards the apex of the cornea

140 cross-sectional images in 30 ms

4,330 frames per second

8 mm horizontal coverage

Air puff

60 mmHg

3.05 mm

Corneal Deformation



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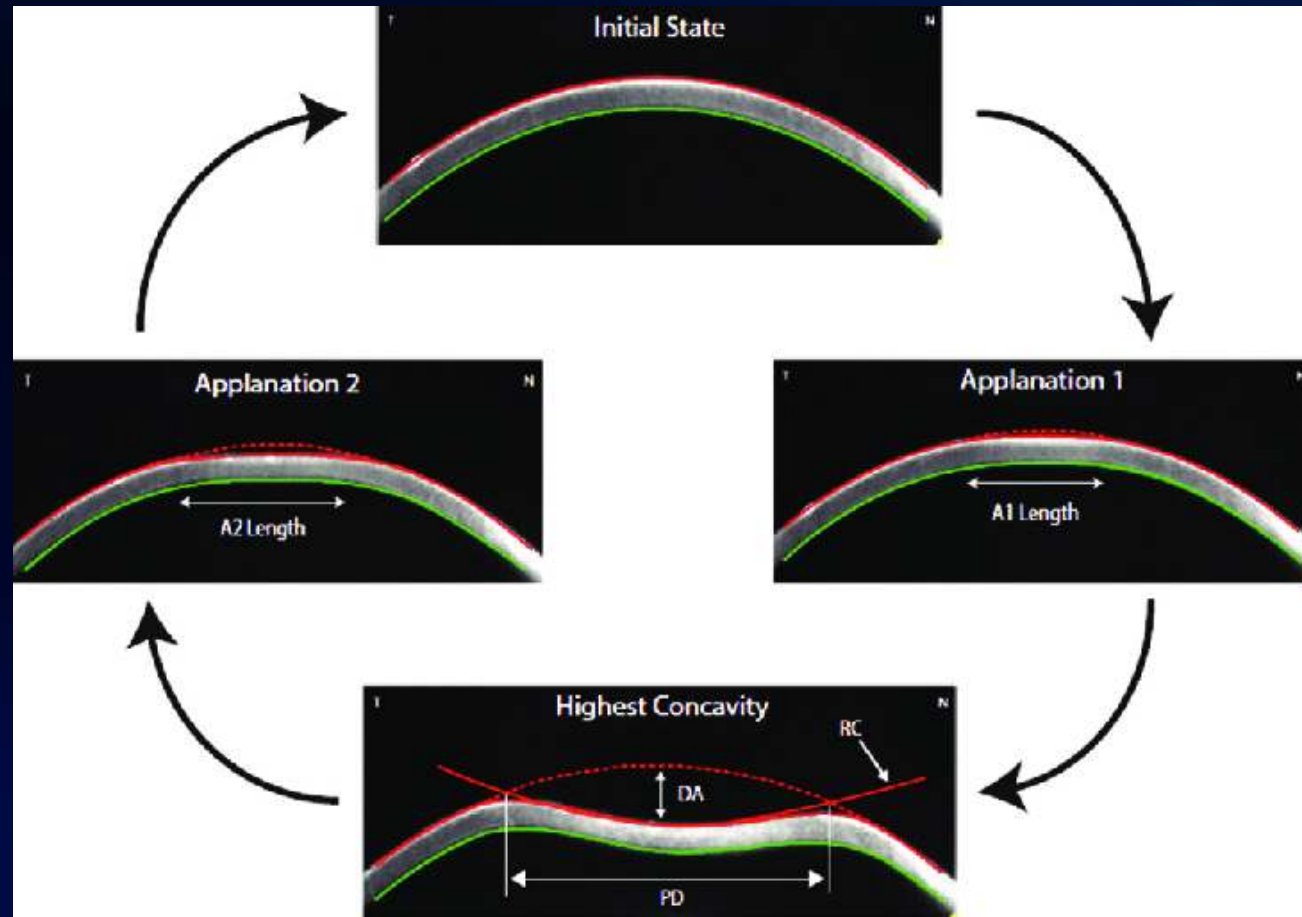
Eye: Left (OS)

 ZOCULUS

0.00 ms

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Scheimpflug images of the corneal deformation response on Corvis ST showing the biomechanical parameters derived at each stage. The fixed air puff causes the cornea to flatten (applanation point A1) and then move inwards to reach the point of highest concavity where the deformation amplitude (DA in mm), peak distance (PD in mm), and the radius of curvature (RC in mm) are measured. As the cornea begins to assume its normal, convex shape, it passes through the second applanation point (A2)



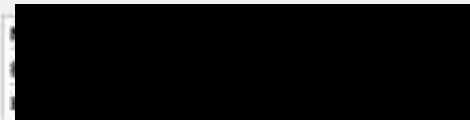
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OCULUS Corvis® ST - Dynamic Corneal Response

16/2021



ID: Unikat KC

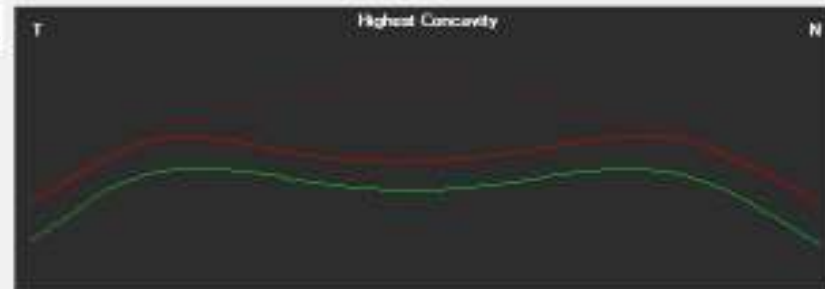
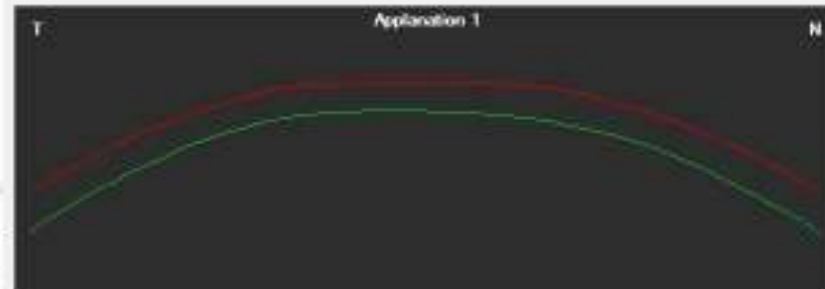
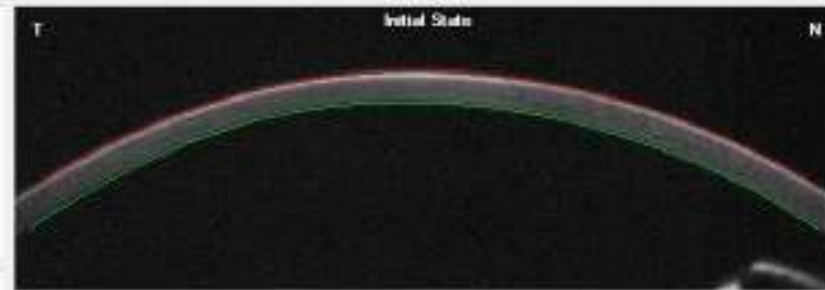
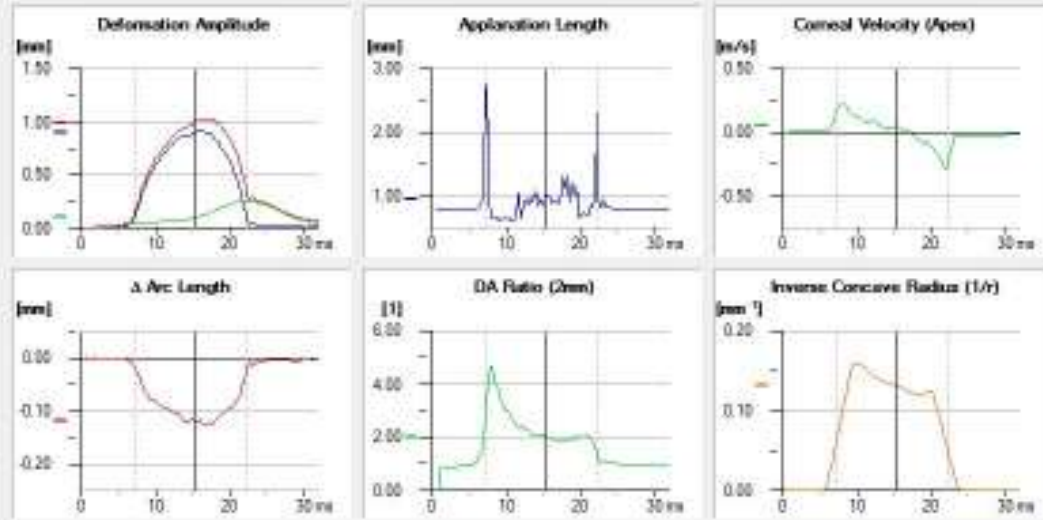
Date of birth: 20.05.1990

Age: 31

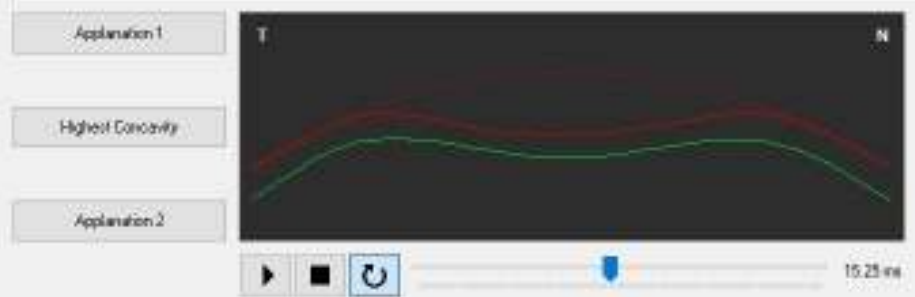
Time: 12:51:20

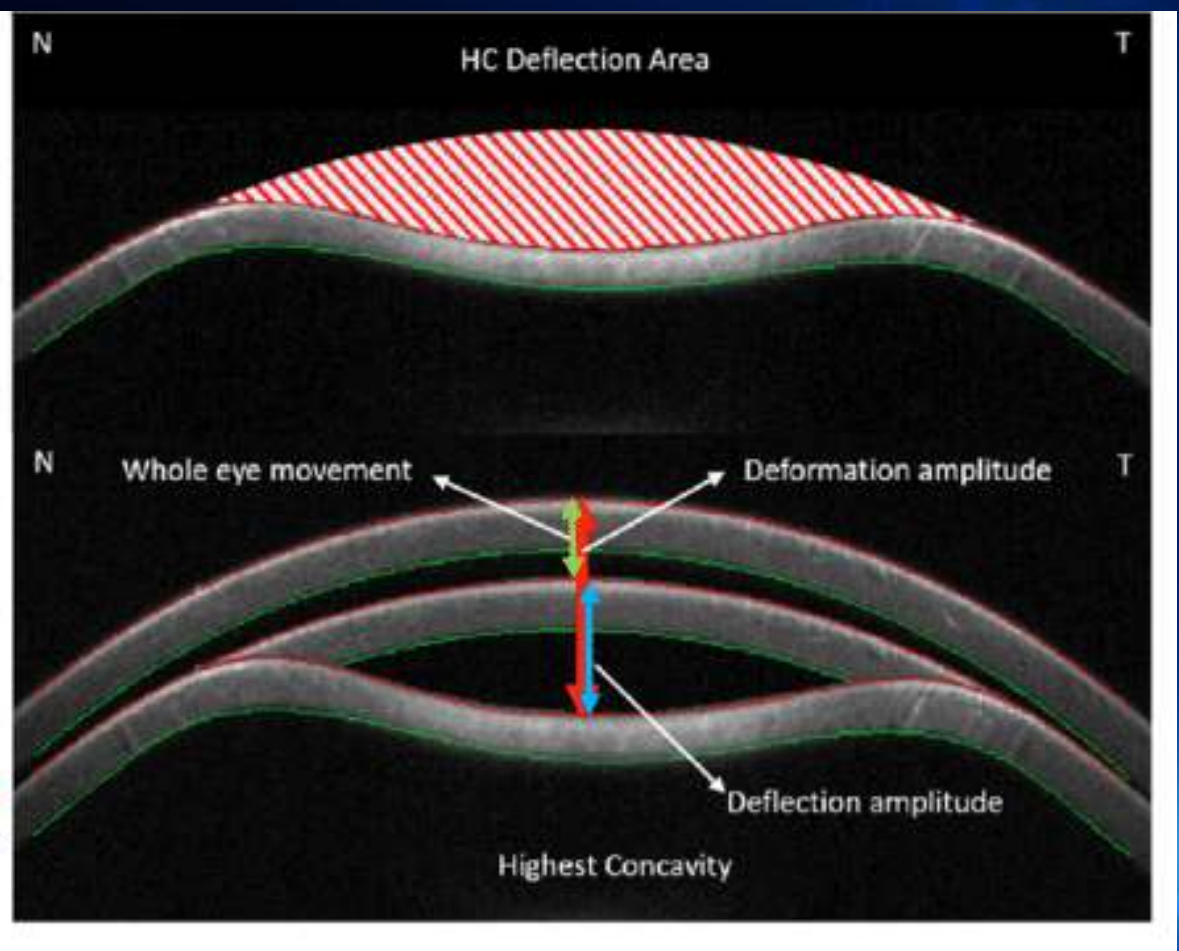
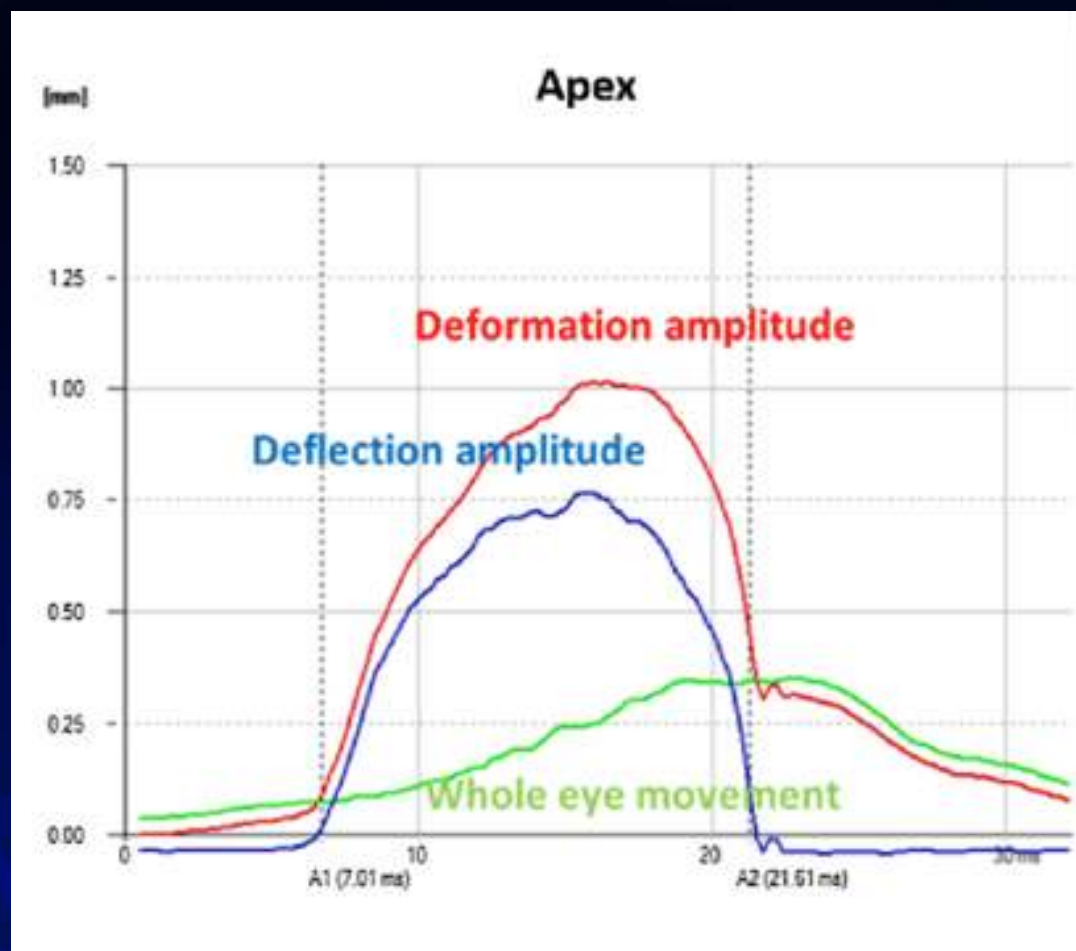
Eye: Right (OD)

OS: OK



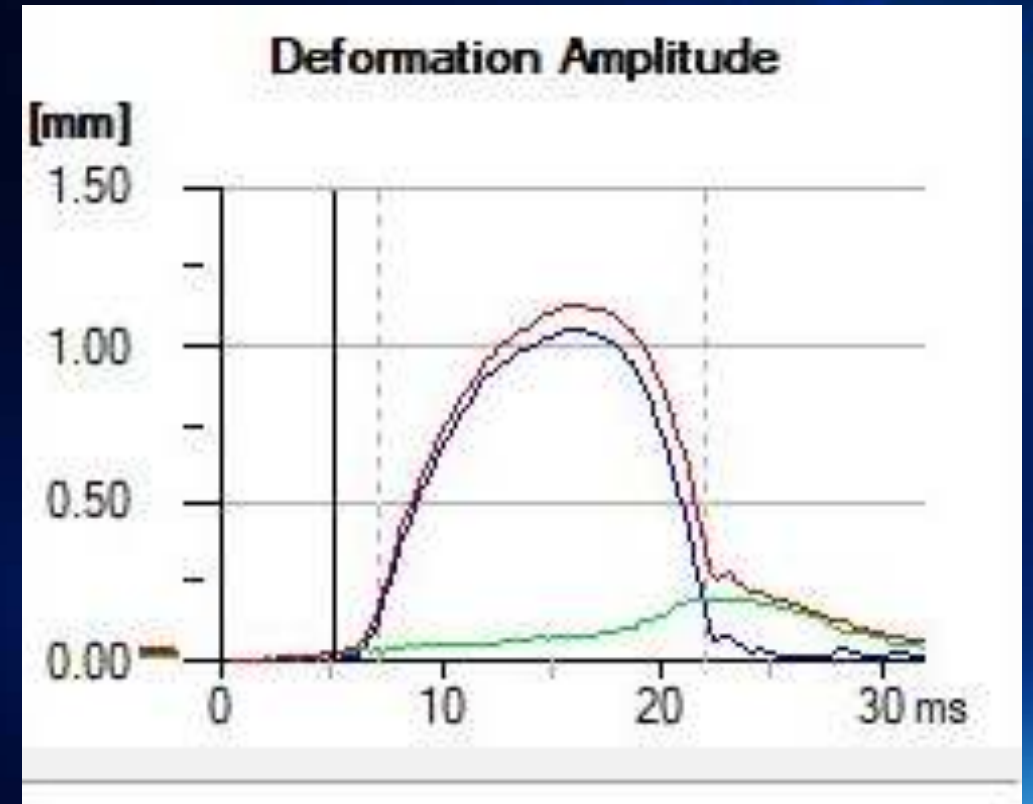
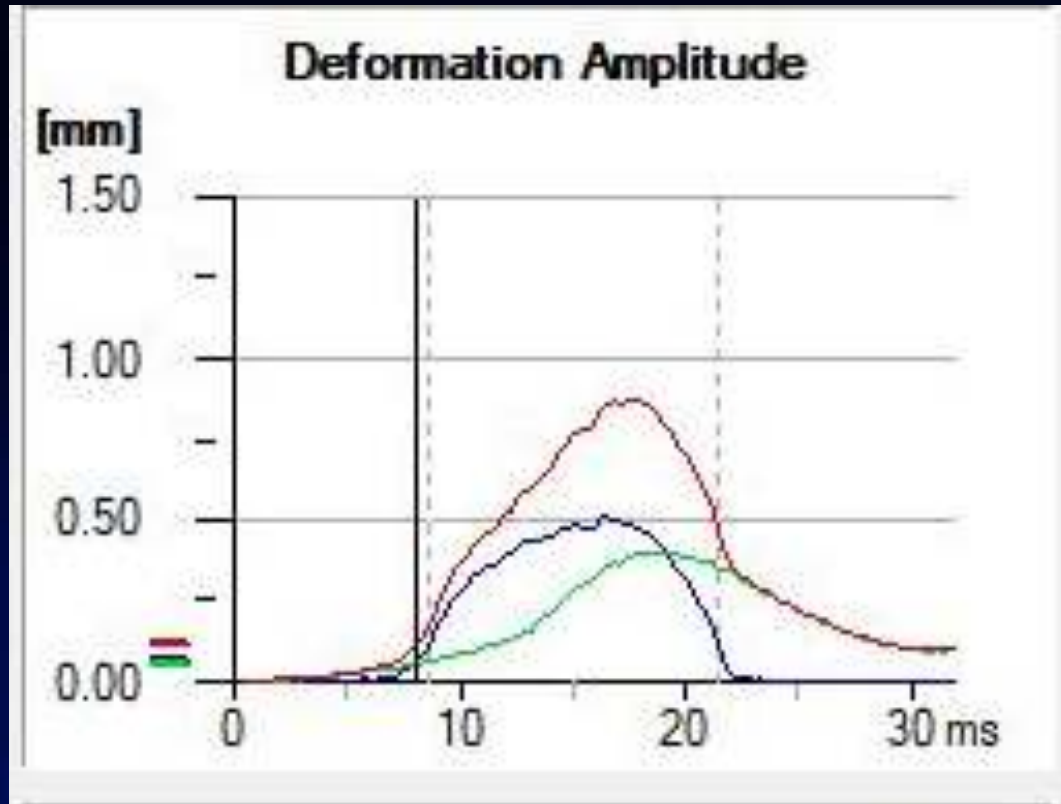
| | Length | Velocity | IOP | |
|-------------------|---------------|-----------|--------------------------|-------------|
| Application 1 | 2.72 mm | 0.15 m/s | iOP (no corr): 12.5 mmHg | |
| Application 2 | 1.53 mm | -0.25 m/s | bIOP: 12.4 mmHg | |
| | Peak Distance | Radius | Deform. Amplitude | Pachymetry |
| Highest Concavity | 5.14 mm | 8.55 mm | 1.03 mm | CCT: 519 µm |

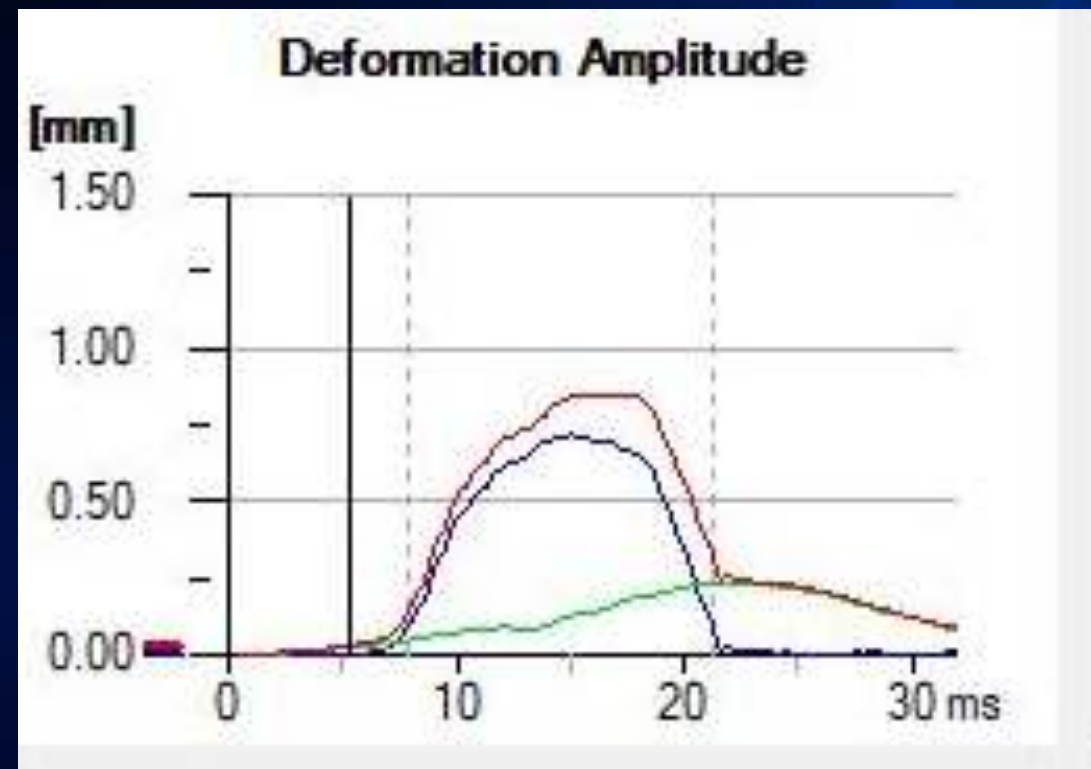
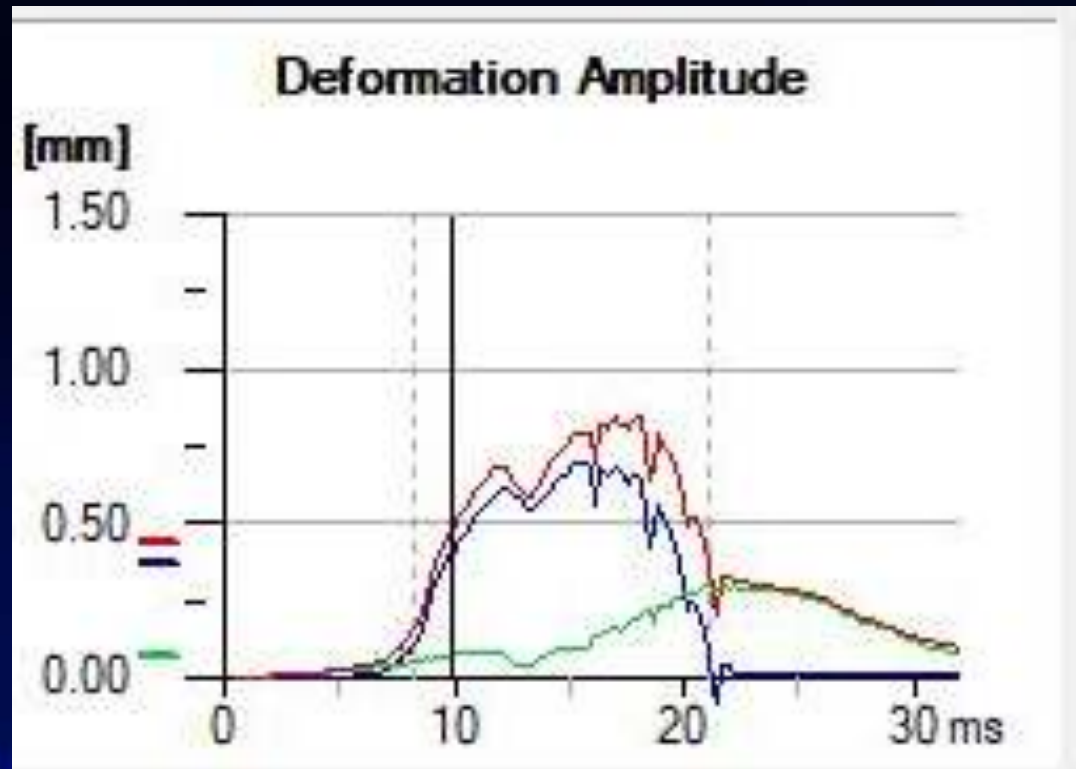




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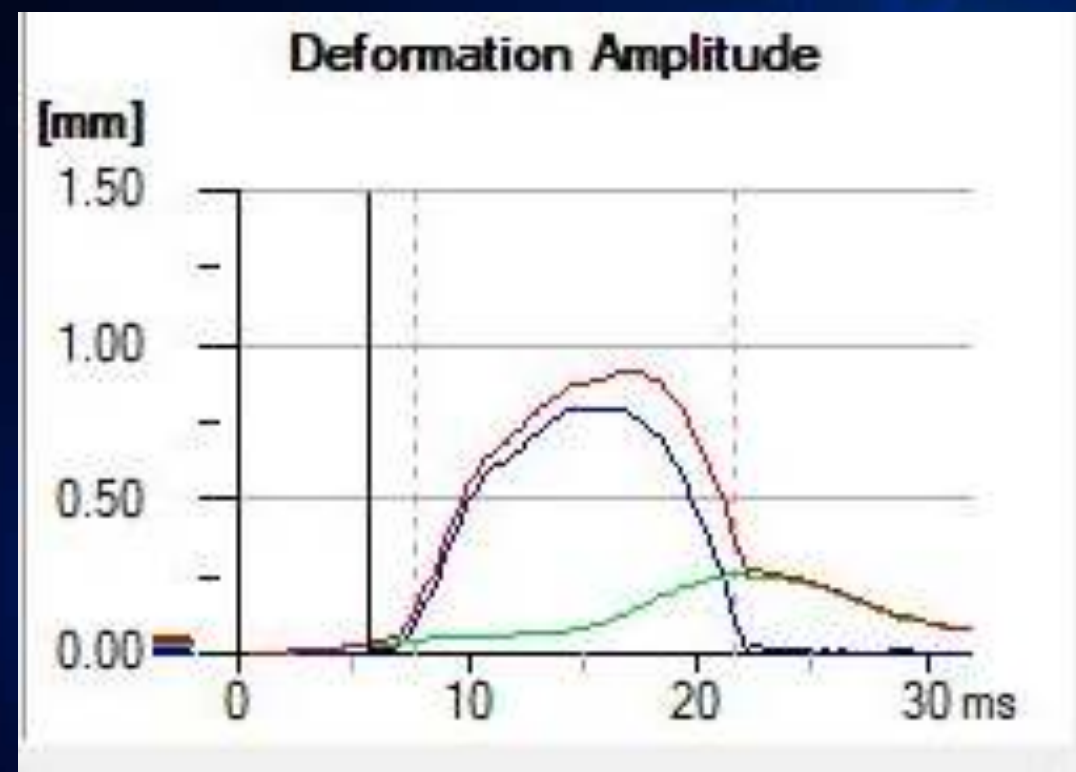
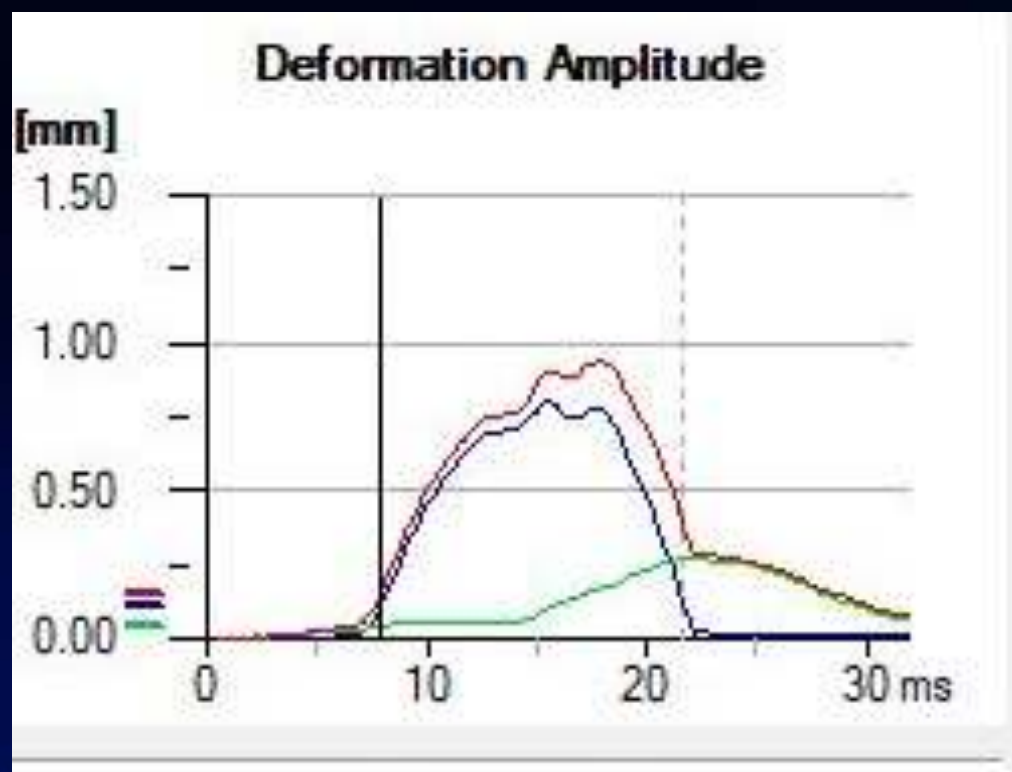
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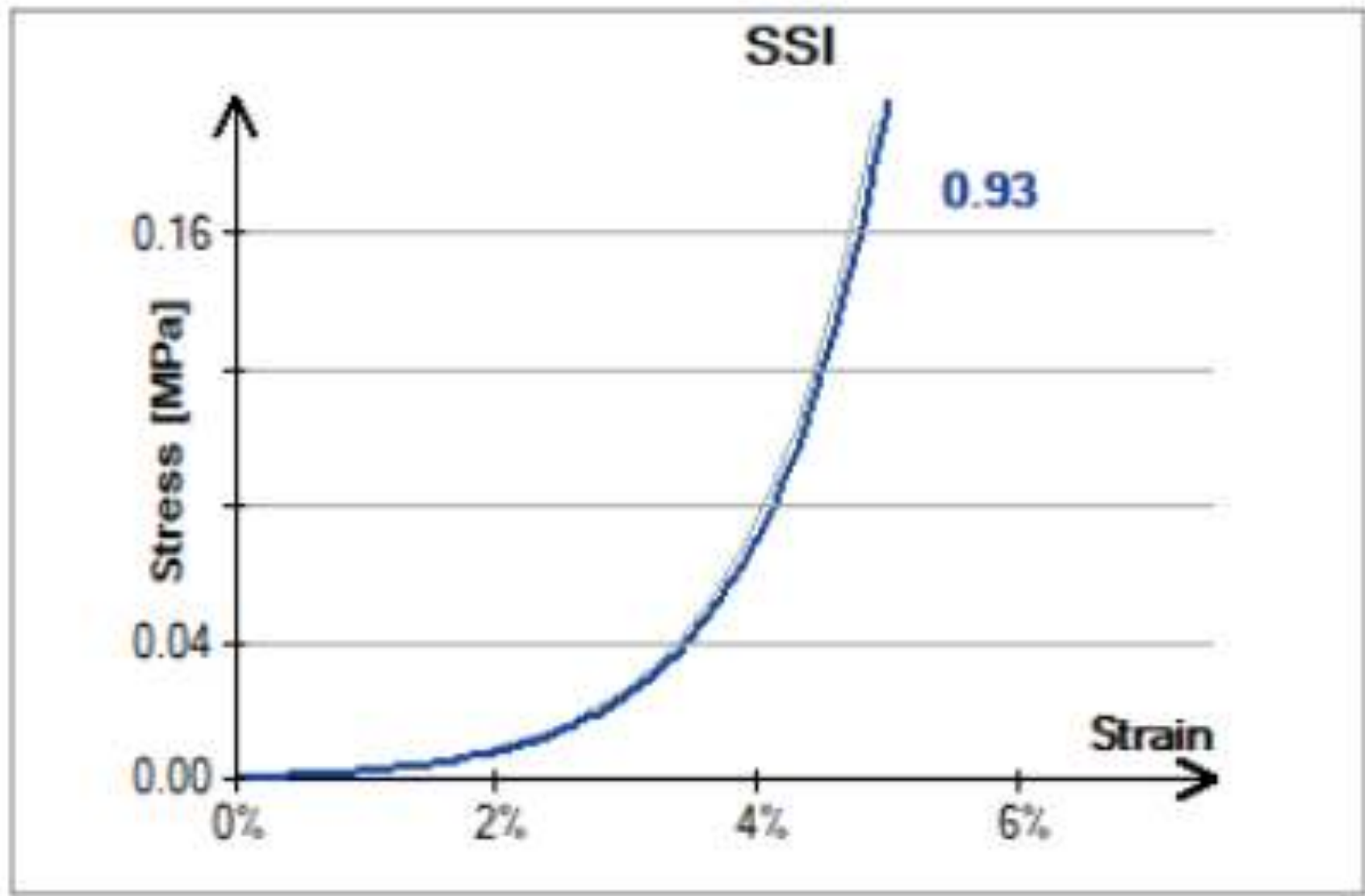
SS Curve and SSI

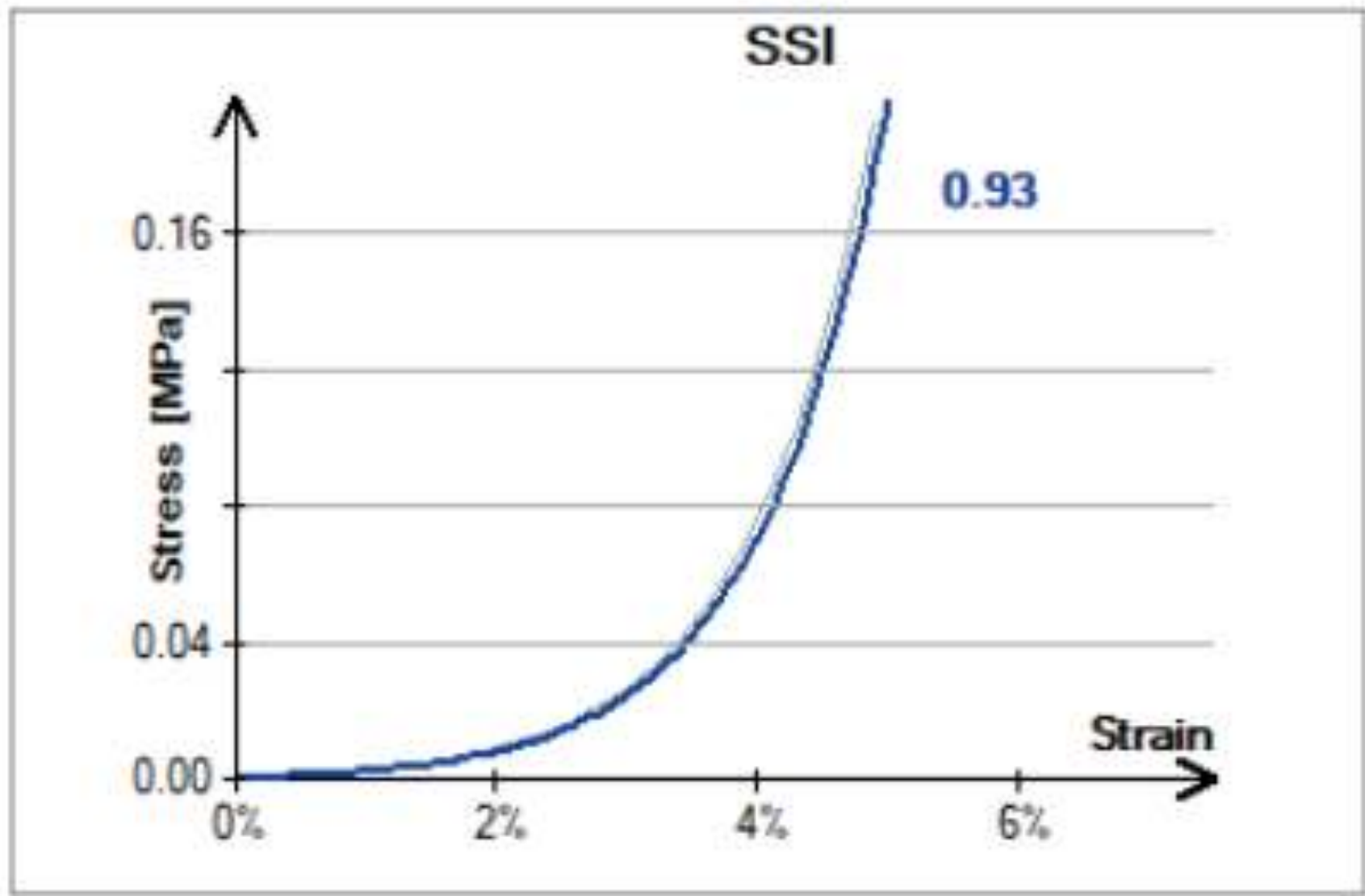
- SS curves describe the intrinsic elastic properties of the cornea.
- Shifted to the right if the cornea is softer, and shifted to the left if the cornea is stiffer.
- Less dependent on corneal thickness and IOP.

SS Curve and SSI

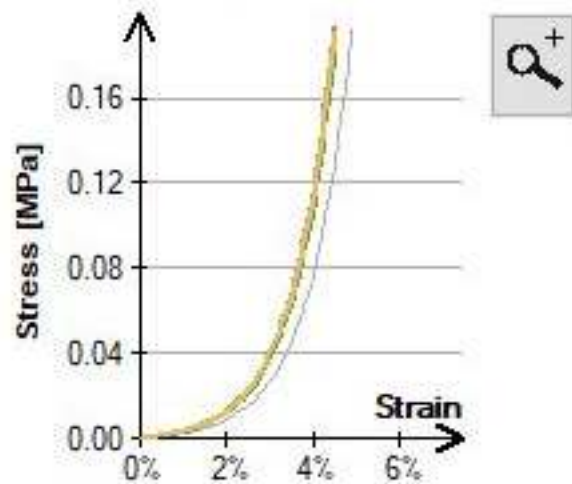
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SSI



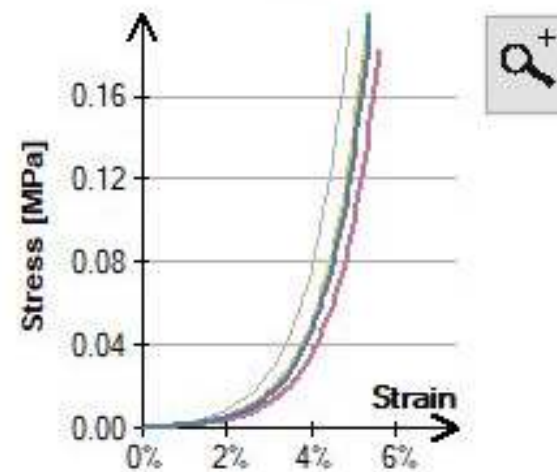
| | | | | |
|--------|------|------|------|--|
| Value: | 1.5 | 1.4 | 1.5 | |
| SD: | -2.3 | -1.9 | -2.2 | |

BaseLine

Changes from baseline exam:

| | | |
|-------------|------|------|
| Diff. time: | 0.3y | 0.5y |
| Diff. SD: | 0.4 | 0.1 |
| Stiffer | | |
| not sign. | ✓ | ✓ |
| softer | | |

SSI



| | | | | |
|--------|-----|-----|-----|-----|
| Value: | 0.5 | 0.6 | 0.6 | 0.6 |
| SD: | 2.5 | 1.8 | 1.6 | 1.8 |

BaseLine

Changes from baseline exam:

| | | | |
|-------------|------|------|------|
| Diff. time: | 0.9y | 2.8y | 3.8y |
| Diff. SD: | -0.7 | -0.9 | -0.7 |
| Stiffer | ✓ | ✓ | ✓ |
| not sign. | | | |
| softer | | | |

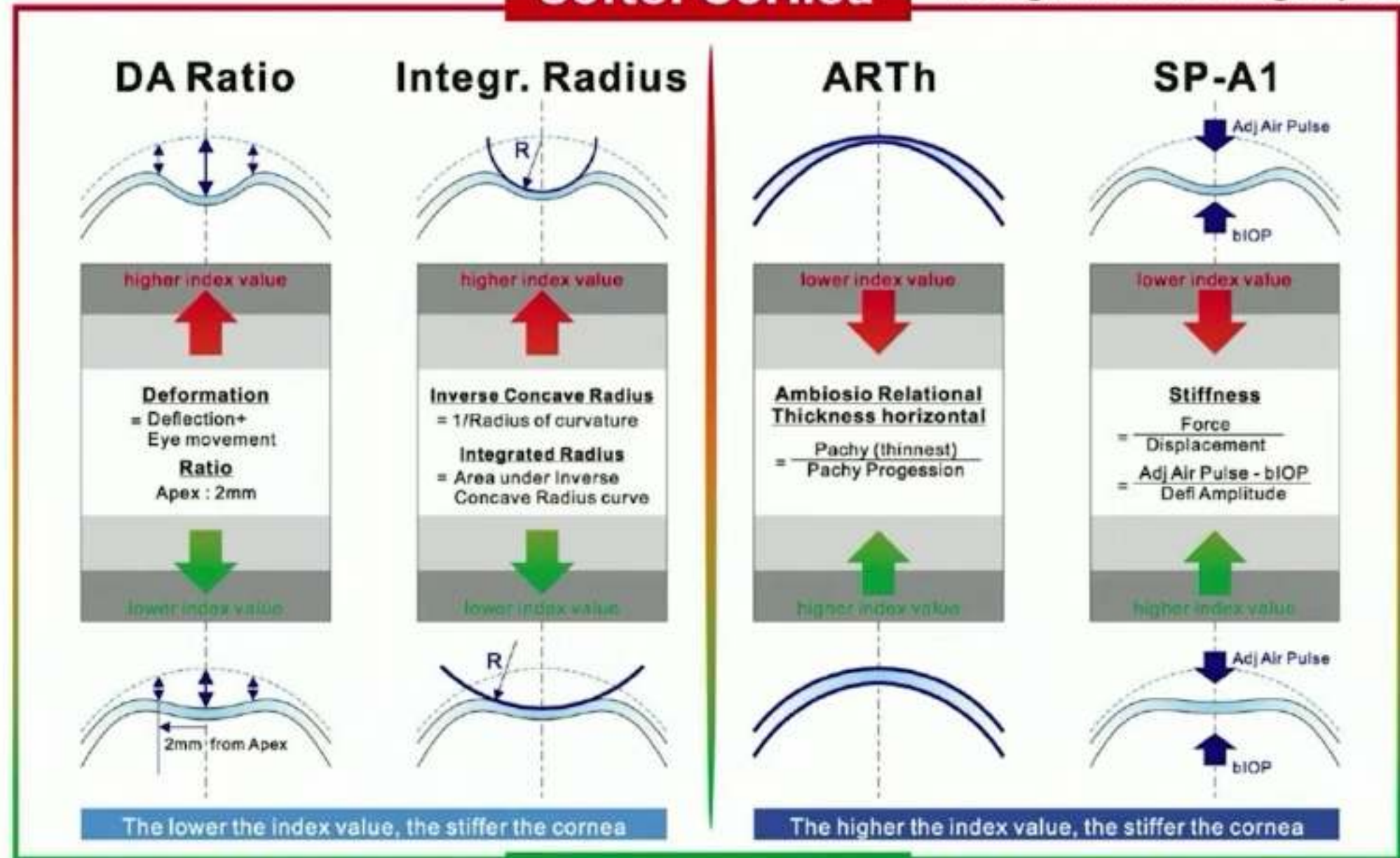
| | |
|-----------------------------|--|
| 1 st Applanation | Moment at the first applanation of the cornea during the air puff (in milliseconds). In parenthesis is the length of the applanation at this moment (in millimeters) |
| Highest Concavity | Moment that the cornea assumes its maximum concavity during the air puff (in milliseconds). In parenthesis is the length of the distance between the two peaks of the cornea at this moment (in millimeters) |
| 2 nd Applanation | Moment at the second applanation of the cornea during the air puff (in milliseconds). In parenthesis is the length of the applanation at this moment (in millimeters) |
| Maximum Deformation | Measurement (in millimeters) of the maximum cornea deformation during the air puff |
| Wing Distance | Length of the distance between the two peaks of the cornea at this moment (in millimeters) |
| Maximum Velocity (in) | Maximum velocity during the ingoing phase (in meters per seconds [m/s]) |
| Maximum Velocity (out) | Maximum velocity during the outgoing phase (in meters per seconds [m/s]) |
| Curvature Radius Normal | Radius of curvature of the cornea in its natural state (in millimeters) |
| Curvature Radius HC | Radius of curvature of the cornea at the time of maximum concavity during the air puff (in millimeters) |
| Cornea Thickness | Measurement of the corneal thickness (in millimeters) |
| IOP | Measurement of the intraocular pressure (in millimeters of Mercury [mmHg]) |
| DARatio 2 mm | Ratio between vertical displacement at apex and at 2 mm |
| Inverse concave Radius | Inverse of the Radius of curvature during concave phase of the deformation |
| Integrated Radius | Area under the inverse concave Radius vs. time curve |
| SP-A1 | Parameter reflecting bending stiffness of the cornea as defined by force/replacement |
| blOP | Biomechanical corrected IOP |
| CBI | Corvis Biomechanical Index: overall biomechanical index for kc detection |
| TBI | Tomographic Biomechanical Index: combines tomographic and biomechanical data for enhanced ectasia detection |

CBI

Corvis Biomechanical Index

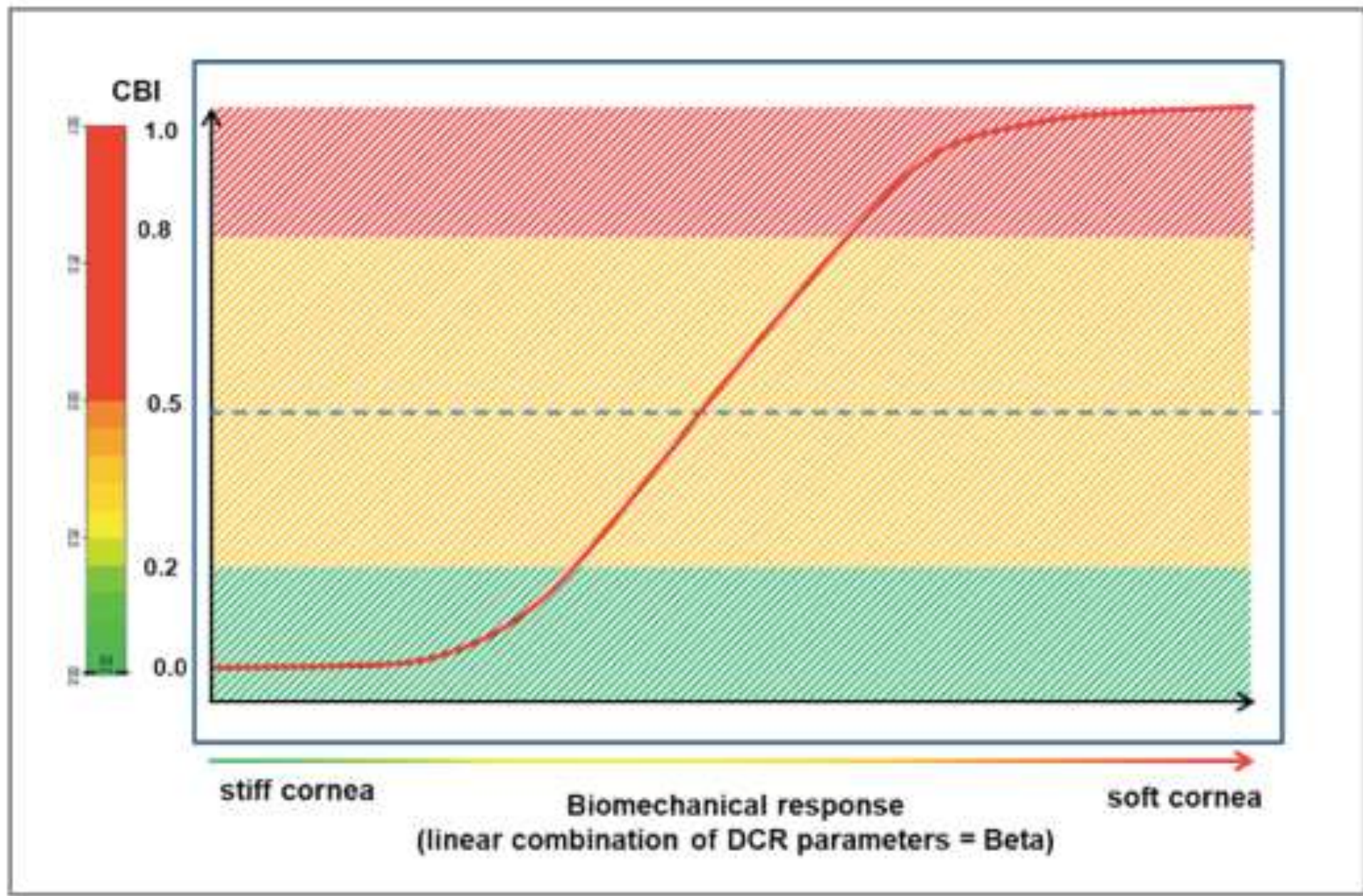
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Stiffer Cornea

updated 20170721



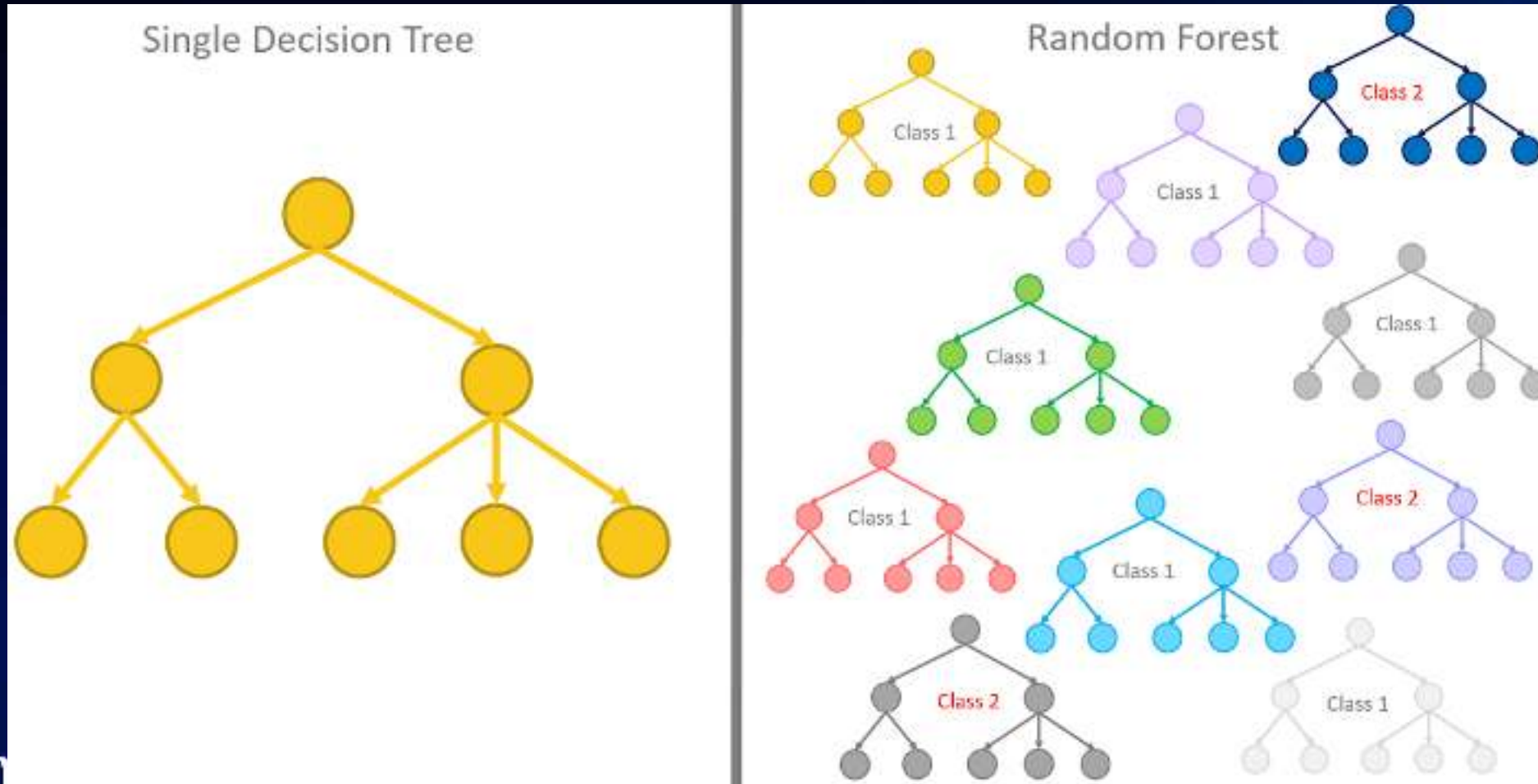
TBI

Tomographic Biomechanical Index

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TBI calculation

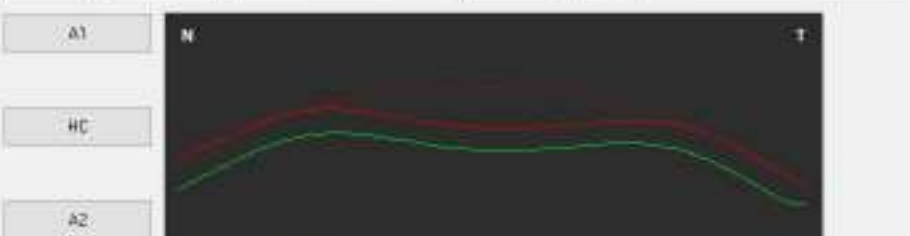
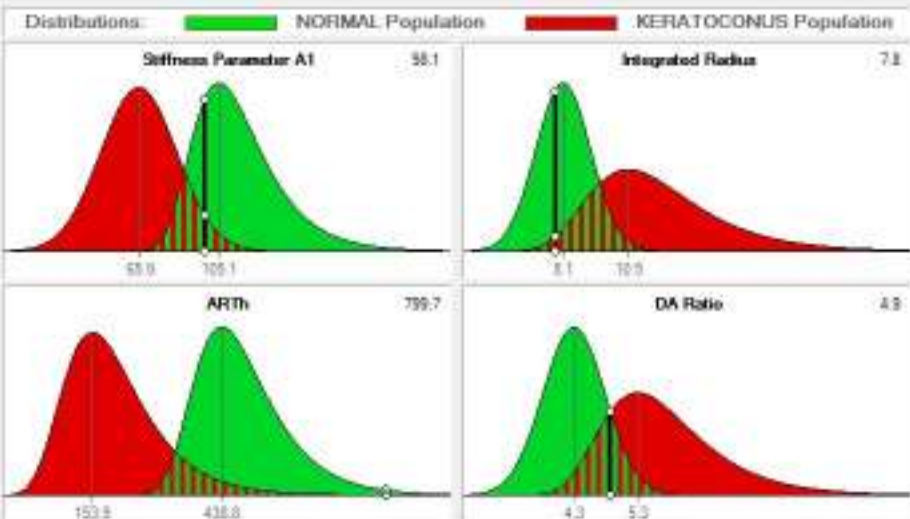


OCULUS Corvis® ST - Biomechanical/Tomographic Assessment (ARV)

16/2021

Name: [REDACTED] ID: [REDACTED] Date of birth: 16.10.1962 Age: 38
 Exam. Date: 27.09.2021 Time: 11:47:25 Eye: Left (OS) Exam. Date: 27.09.2021 Time: 11:51:06 Eye: Left (OS)
 Info: [REDACTED] QS: OK Info: [REDACTED] QS: OK

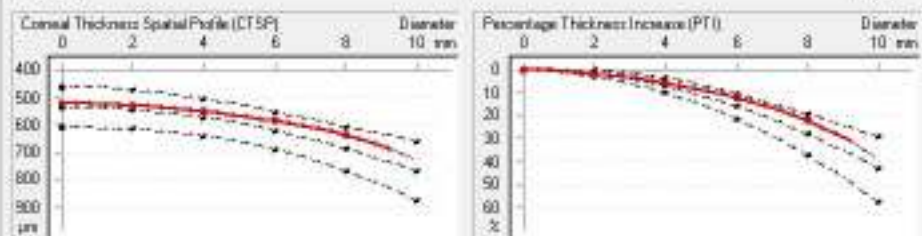
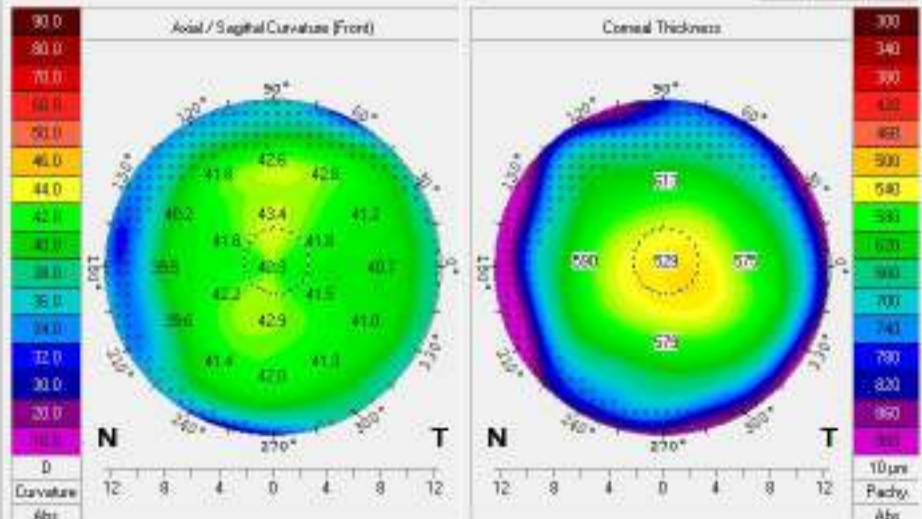
Corvis ST - Biomechanical Assessment



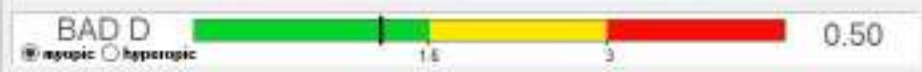
29.10 res IOP_{fact}: 14.5 mmHg BIOP: 14.4 mmHg



Pentacam - Tomographic Assessment



K Max.: 43.6 D IS Value: -0.3 D PRFI: 0.04 TKC:



EOS 20
EGYPTIAN C

Oculus Optikgeräte GmbH
Münchholzhauser Str. 29

35582 Wetzlar

Tel: (0641) 20 05-0
Fax: (0641) 20 05-255

www.oculus.de

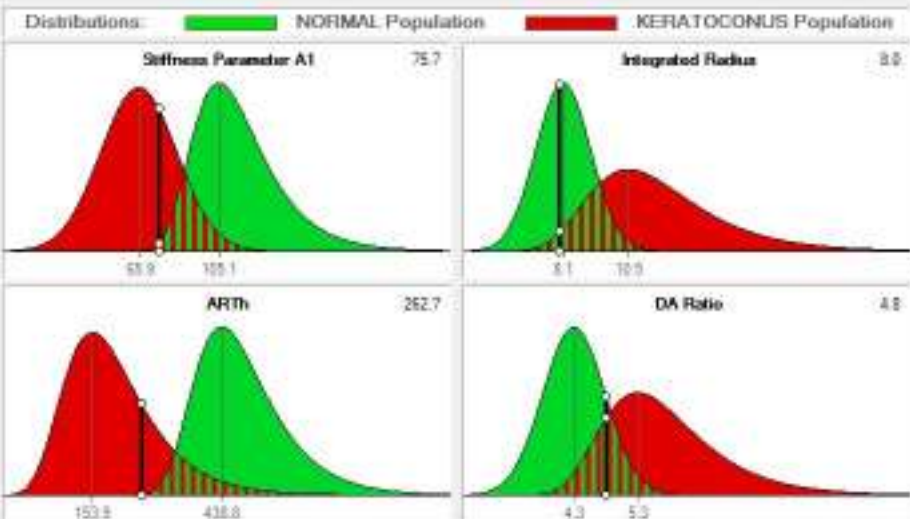


OCULUS Corvis® ST - Biomechanical/Tomographic Assessment (ARV)

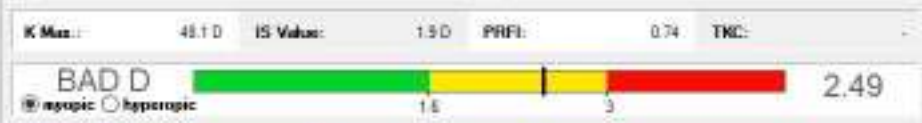
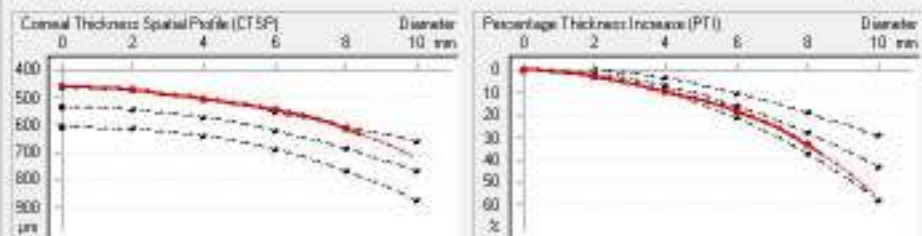
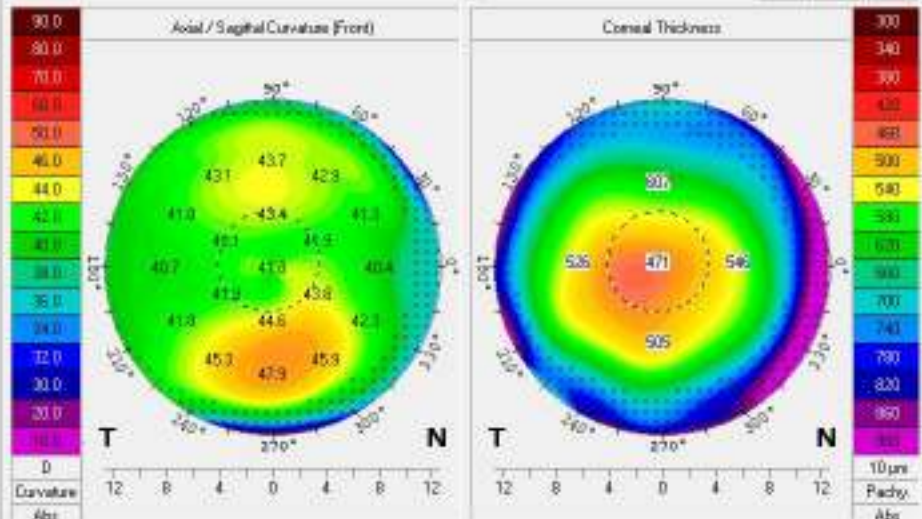
16/2021

Name: [Redacted] ID: [Redacted] Date of birth: 01.12.1998 Age: 22
 Exam. Date: 11.10.2021 Time: 13:05:57 Eye: Right(OD) Exam. Date: 11.10.2021 Time: 12:58:56 Eye: Right(OD)
 Info: [Redacted] QS: OK Info: [Redacted] QS: OK

Corvis ST - Biomechanical Assessment



Pentacam - Tomographic Assessment

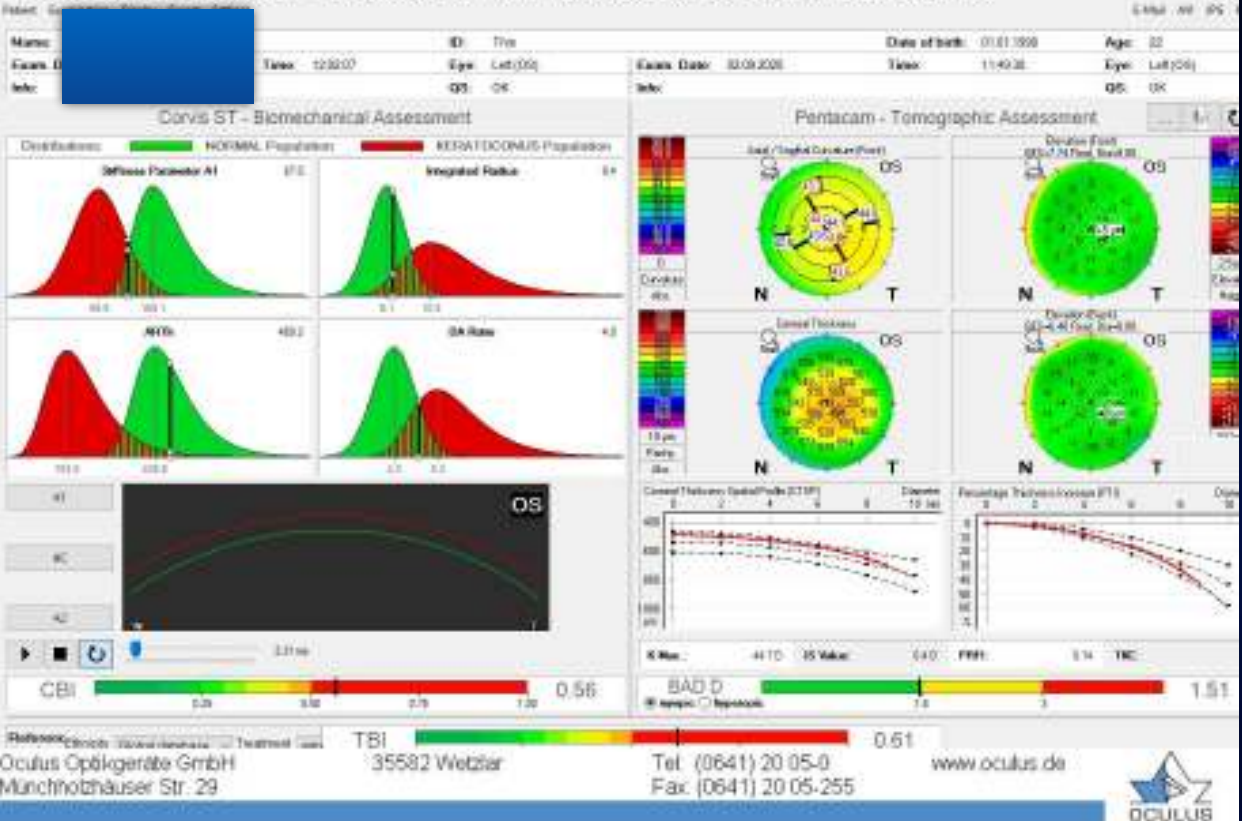


CBI Ethnicity

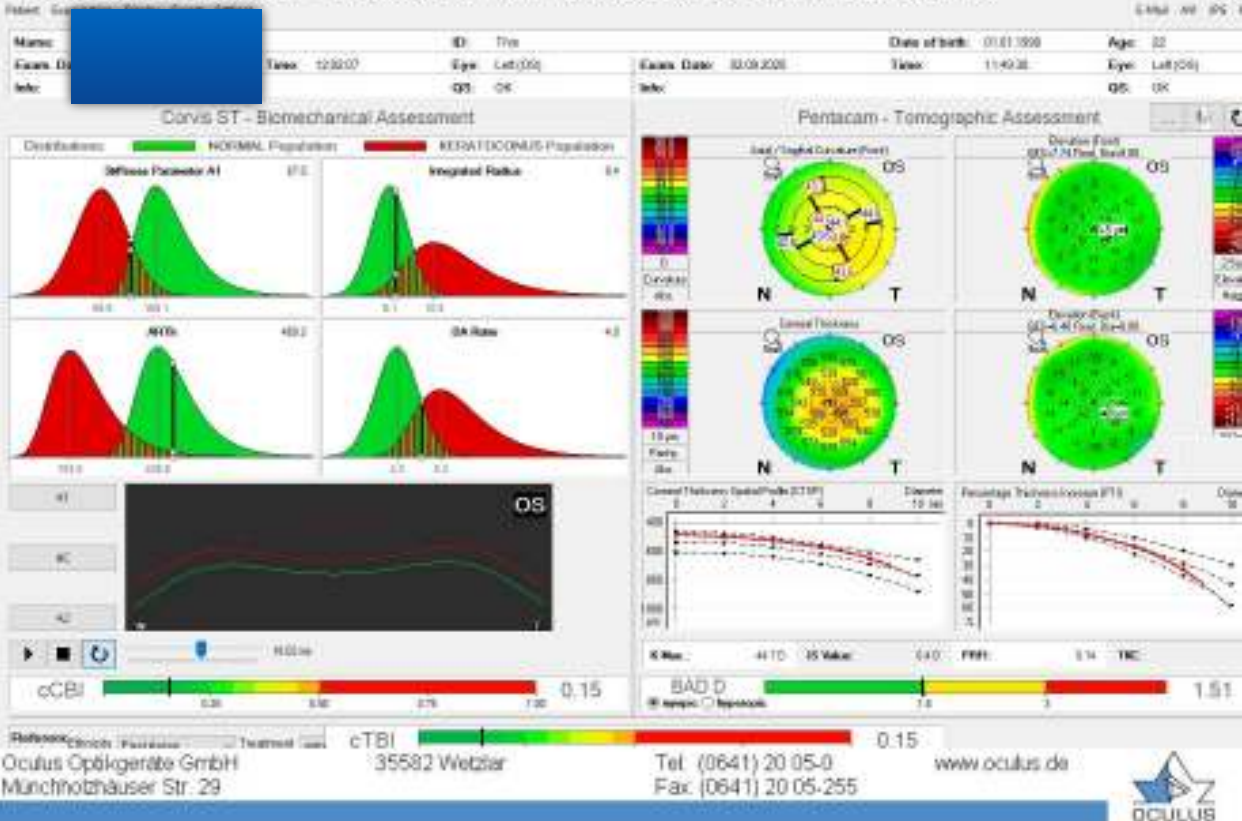
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OCULUS Corvis® ST - Biomechanical/Tomographic Assessment (ARV)



OCULUS Corvis® ST - Biomechanical/Tomographic Assessment (ARV)



KC Ectasia Susceptibility

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OCULUS - PENTACAM 4 Maps Selectable

1.2.2019

Last Name: XXXXXXXXXX
 First Name: XXXXXXXXXX
 ID: XXXXXXXXXX
 Date of Birth: 12/05/1975 Eye: Right
 Exam Date: 08/27/2021 Time: 10:39:27
 Exam Info:

Cornea Front



| | | | |
|-------------|---------|--------------|---------|
| Rf: | 5.68 mm | K1: | 59.4 D |
| Ra: | 5.14 mm | K2: | 65.7 D |
| Rm: | 5.41 mm | Km: | 62.4 D |
| OS: | OK | Axis: (flat) | 172.2° |
| Q-val (30°) | 1.72 | Asig: | 6.2 D |
| | | Rper: | 7.27 mm |
| | | Rmin: | 4.51 mm |

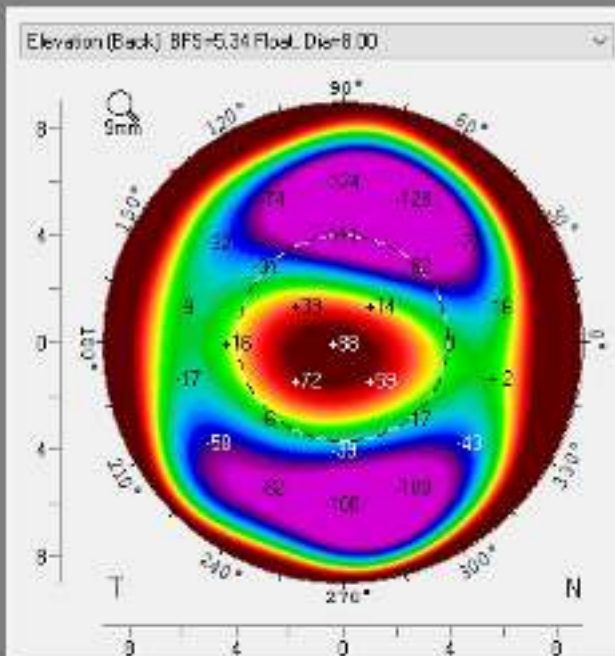
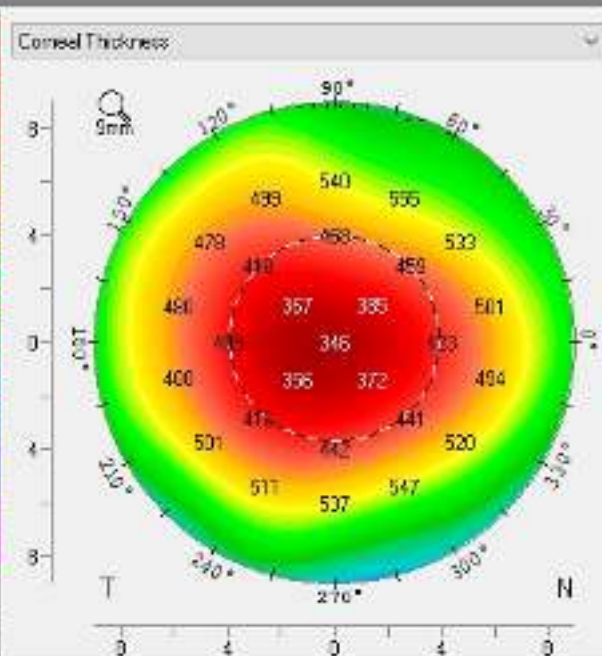
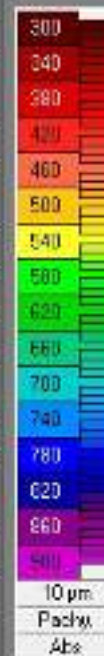
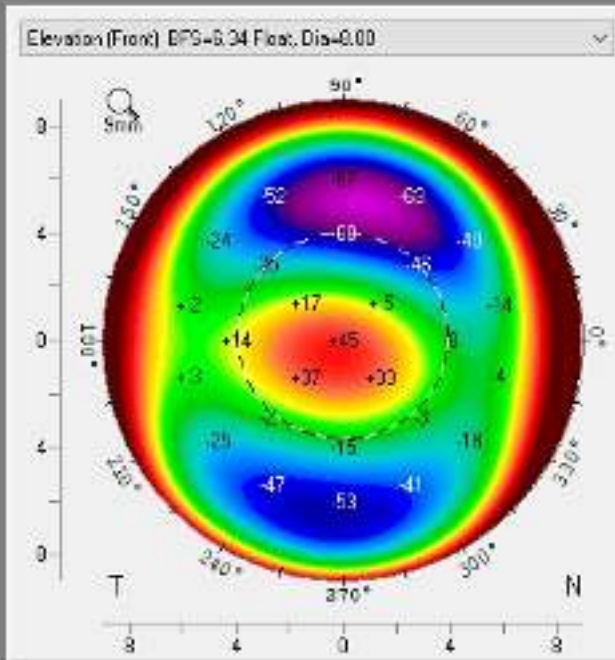
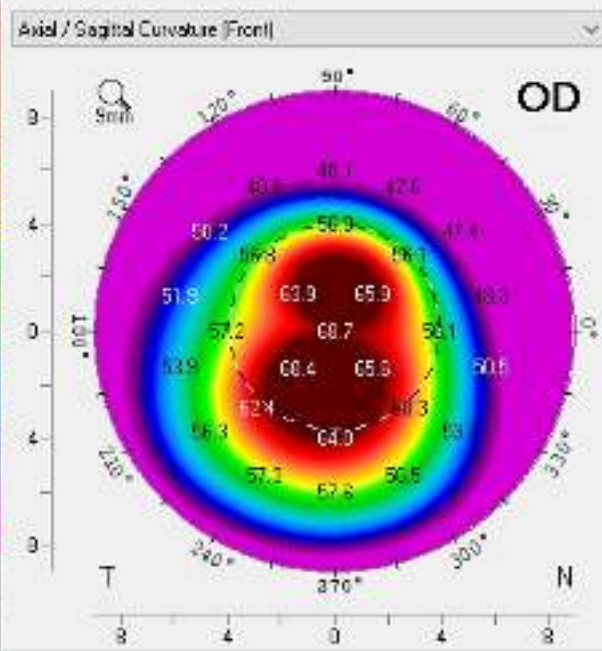
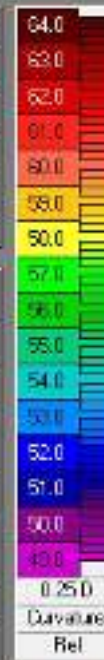
Cornea Back



| | | | |
|-------------|---------|--------------|---------|
| Rf: | 4.54 mm | K1: | -8.8 D |
| Ra: | 3.90 mm | K2: | -10.3 D |
| Rm: | 4.22 mm | Km: | -9.5 D |
| OS: | OK | Axis: (flat) | 173.7° |
| Q-val (30°) | 1.94 | Asig: | 1.5 D |
| | | Rper: | 6.30 mm |
| | | Rmin: | 3.22 mm |

| | Pachy: | x(mm) | y(mm) |
|-----------------|----------|-------|-------|
| Pupil Center: | + 347 µm | 0.00 | +0.07 |
| Pachy Apex: | - 346 µm | 0.00 | 0.00 |
| Thinned Local.: | ○ 344 µm | -0.35 | -0.20 |
| K Max. (Front): | 74.9 D | -0.07 | -0.25 |

| | | | |
|---------------------|----------------------|------------|---------|
| Cornea Volume: | 52.5 mm ³ | HWTW: | 11.9 mm |
| Chamber Volume: | 213 mm ³ | Angle: | 43.7° |
| A. C. Depth (Int.): | 4.19 mm | Pupil Dia: | 3.89 mm |
| Enter IOP (IDPSum): | -14.1 mmHg | Lens Th: | |



Biomechanics Evaluation

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Biomechanics Evaluation

- KC:
 - Diagnosis of KC.
 - Follow up of KC.
 - Assessment of Ectasia Management.
- Refractive Surgery:
 - Avoid Post LVC Ectasia.
 - Exclude Ectasia Susceptibility.
 - Diagnosis of Post LVC Ectasia.
- Other options.

Diagnosis of KC

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OCULUS - PENTACAM 4 Maps Selectable

1.2209

Last Name:

First Name:


ID:

Date of Birth: 01/01/2001 Eye: Left

Exam Date: 07/12/2021 Time: 11:11:55

Exam Info:

Cornea Front



Rt: 7.43 mm K1: 45.5 D


Rc: 6.63 mm K2: 50.4 D

Rm: 7.05 mm Km: 47.9 D

OS: OK Axis (Rad): 11.5° Astig: 4.8 D

D-rel: -0.33 Rcor: 7.35 mm Rmin: 6.62 mm

Cornea Back



Rt: 6.13 mm K1: -6.5 D

Rc: 5.42 mm K2: -7.4 D

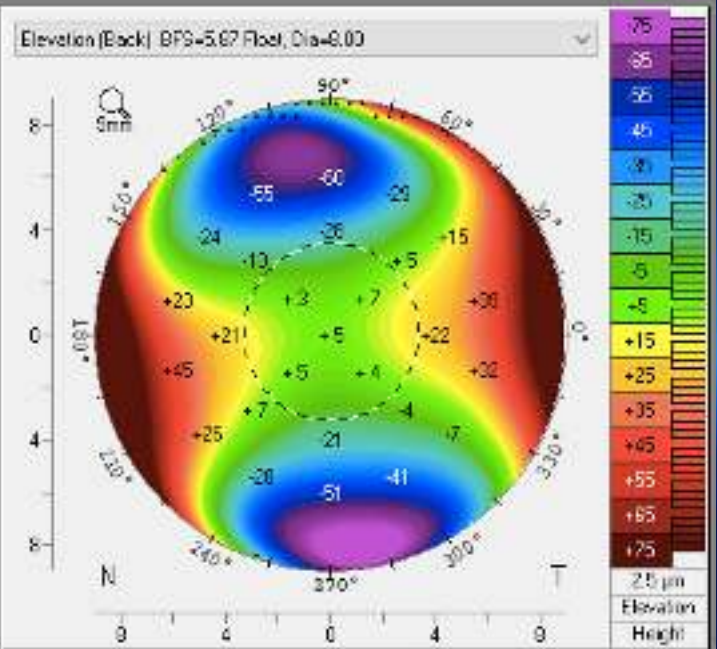
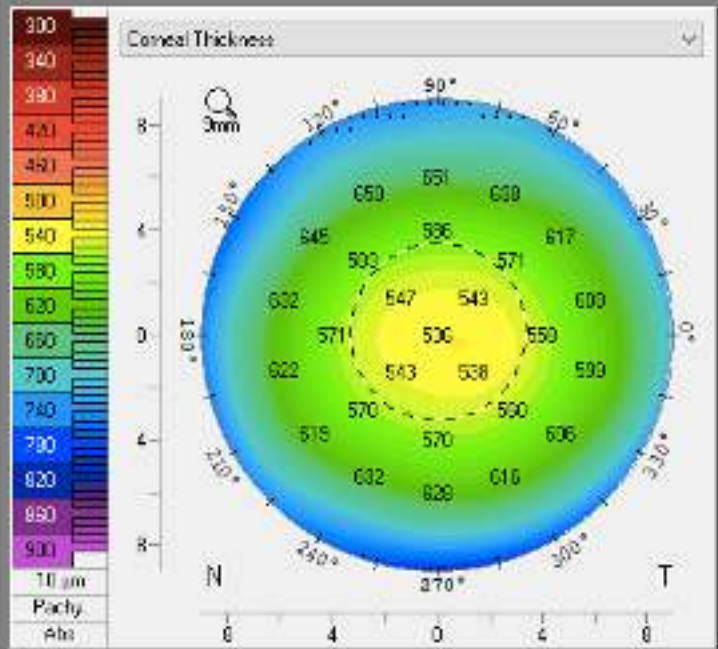
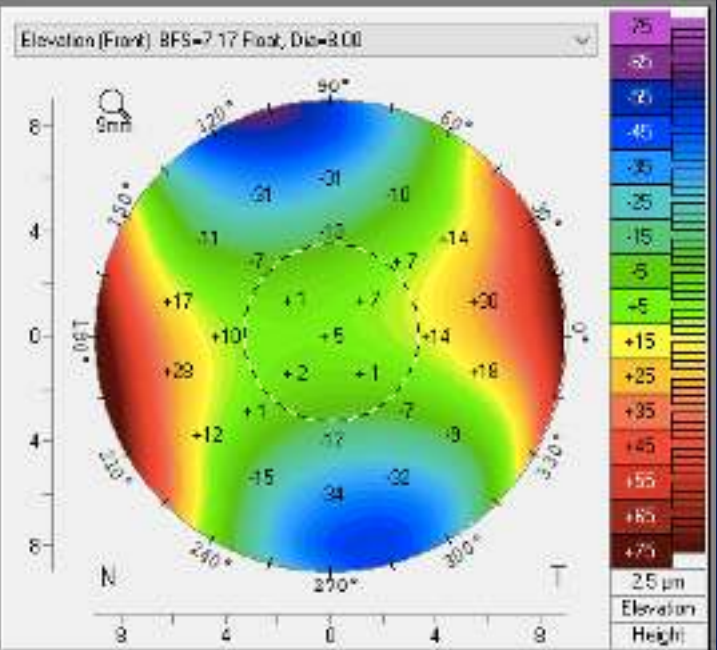
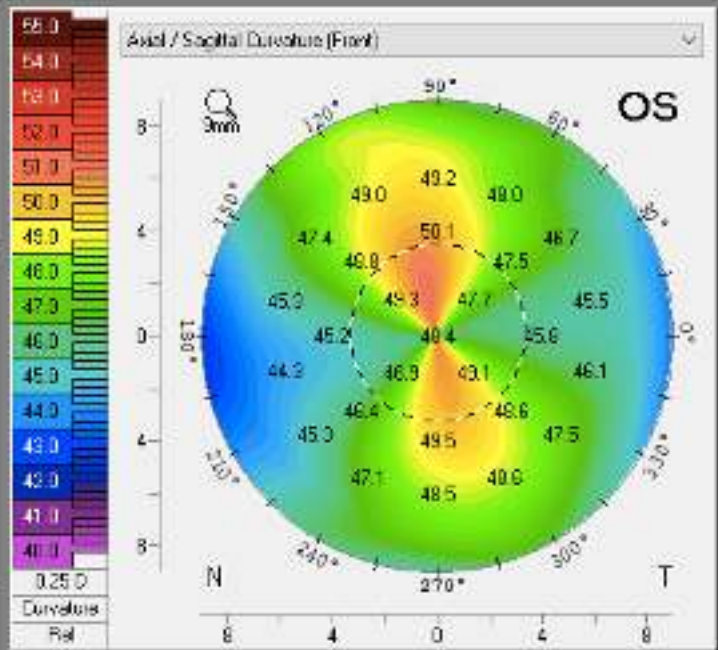
Rm: 5.83 mm Km: 6.9 D

OS: OK Axis (Rad): 7.5° Astig: 0.9 D

D-rel: -0.16 Rcor: 6.13 mm Rmin: 5.29 mm

| | Pachy: | x(mm) | y(mm) |
|-----------------|-------------------------------|----------------------------|----------------------------|
| Pupil Center: | <input type="text"/> + 536 μm | <input type="text"/> +0.02 | <input type="text"/> +0.06 |
| Pachy Apex: | <input type="text"/> 536 μm | <input type="text"/> 0.00 | <input type="text"/> 0.00 |
| Thinnest Local: | <input type="text"/> ○ 535 μm | <input type="text"/> +0.42 | <input type="text"/> -0.18 |
| K Map (Front): | <input type="text"/> 51.0 D | <input type="text"/> -0.12 | <input type="text"/> +0.72 |

| | | | |
|----------------------|---|------------|------------------------------|
| Cornea Volume: | <input type="text"/> 62.9 mm ³ | HW/TW: | <input type="text"/> 11.2 mm |
| Chamber Volume: | <input type="text"/> 170 mm ³ | Angle: | <input type="text"/> 42.0° |
| A. C. Depth (Int.): | <input type="text"/> 3.23 mm | Pupil Dia: | <input type="text"/> 3.96 mm |
| Enter IOP: IOP(Sun): | <input type="text"/> -0.9 mmHg | Lens Th: | <input type="text"/> |



10 Years Old F referred for CXL

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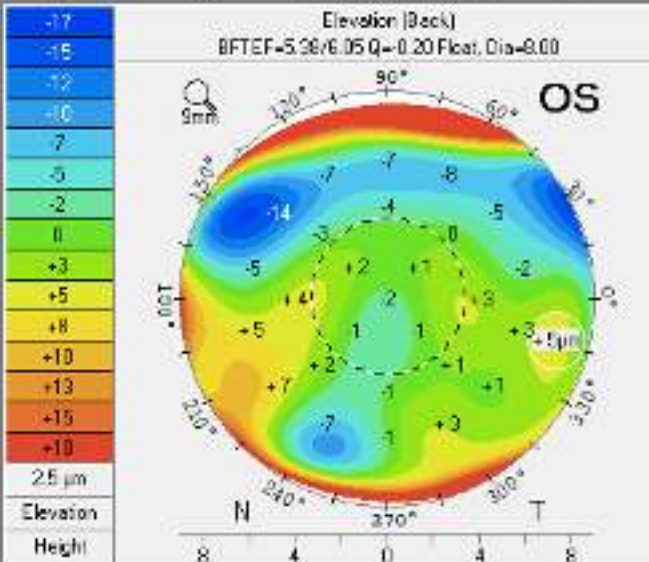
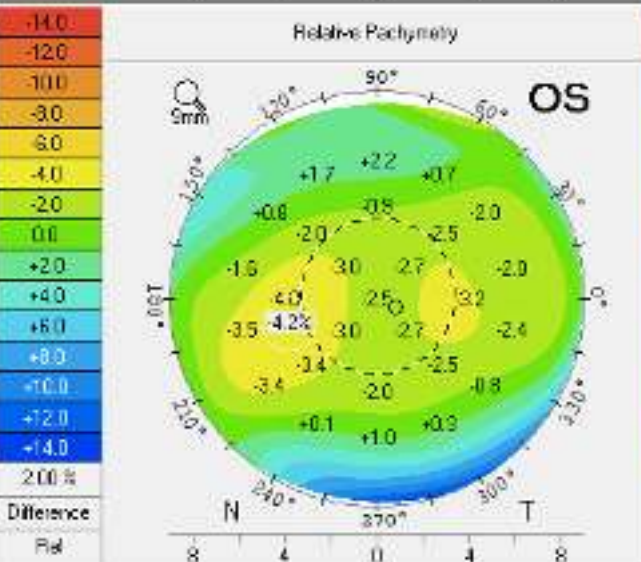
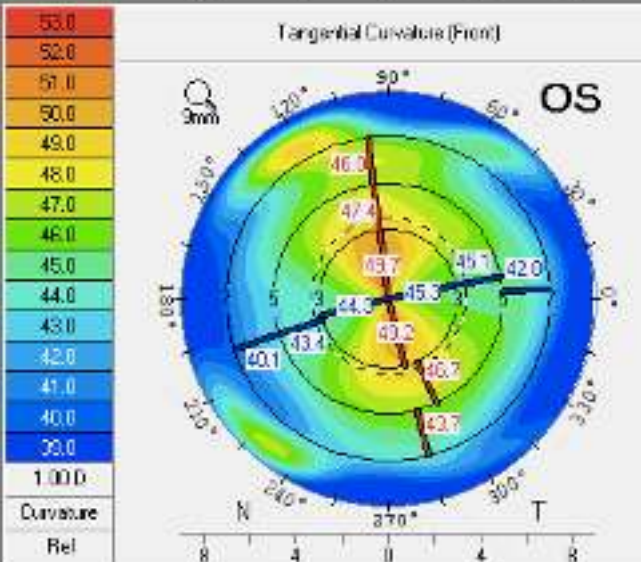
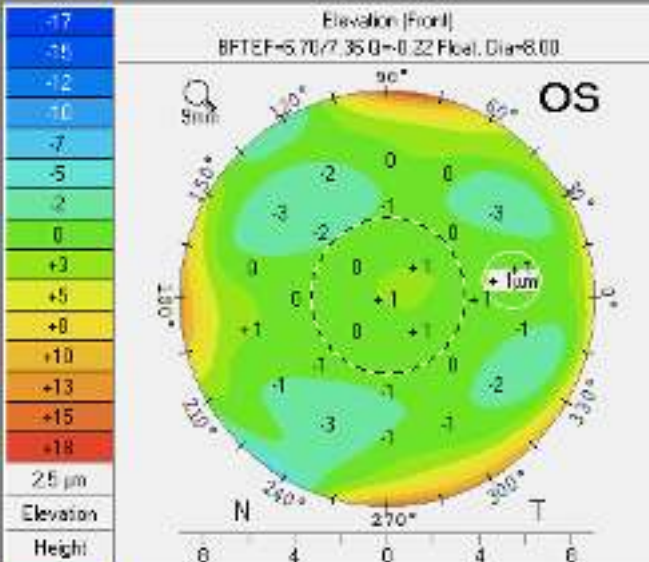
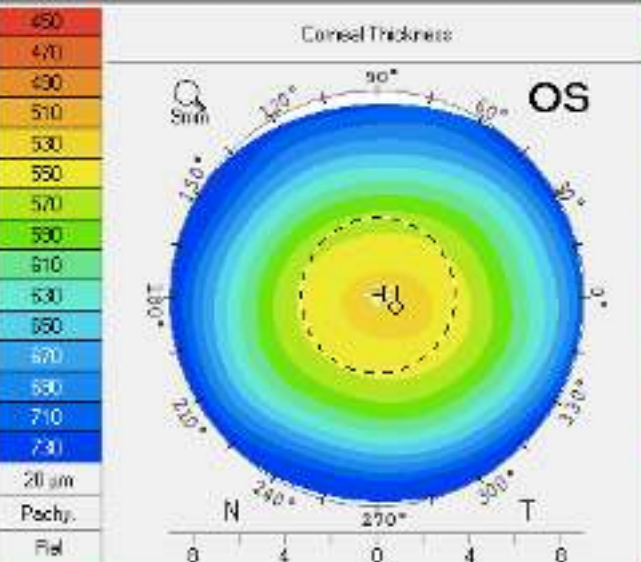
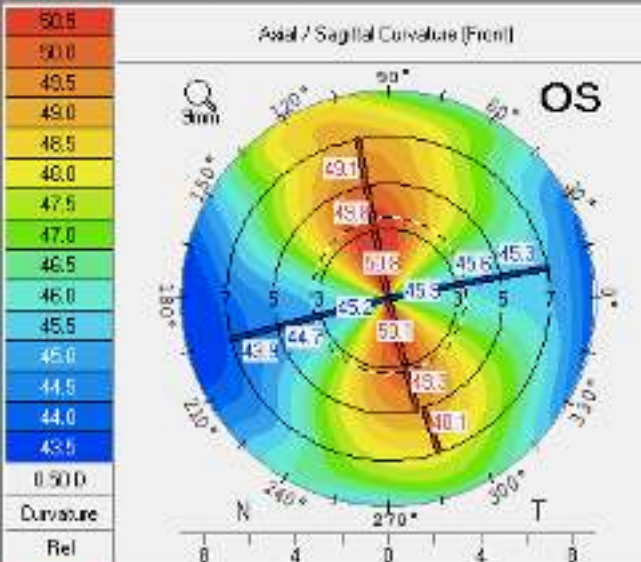
OCULUS - PENTACAM Holladay Report

1.2308

Last Name: XXXXXXXXXX
 First Name: XXXXXXXXXX
 ID: XXXXXXXXXX
 Date of Birth: 07/07/2011 Eye: Left
 Exam Date: 07/12/2021 Time: 11:11:55

| Equiv K-Readings 65 (4.5mm Zone) | | Details | |
|----------------------------------|----------------|---------------------|----------|
| EKR65 Flat K1 | 46.98 D (12°) | 0 (5.0mm) | -0.31 |
| EKR65 Steep K2 | 51.10 D (102°) | Total SA: Z14+5-8.0 | +0.173 μ |
| EKR65 Mean | 48.84 D | Radial Ratio (S/F) | 32.1 % |
| Avg EKR65 | 4.92 D | RMS HOA WFE (5mm) | 0.347 μm |

| | | | | | | |
|------------------|------------|-------------|-----------|----|-----------|----------|
| Pupil Dia | + 3.96 mm | x | 0.32 mm T | y | 0.06 mm S | (rel VN) |
| FWTW | 11 11.2 mm | x | 0.20 mm T | y | 0.11 mm S | (rel VN) |
| Pachy Mir | 535 μm | x | 0.42 mm T | y | 0.18 mm S | (rel VN) |
| Est. Pre-Rel: K1 | 47.6 D | Rel. Change | -0.1 D | | | |
| ACC (E+I) | 3.73 mm | Chord μ | 0.06 mm | OS | OK | |



OCULUS - PENTACAM Topometric/KC-Staging

1.2018

Last Name: XXXXXXXXXX
 First Name: XXXXXXXXXX
 ID: XXXXXXXXXX
 Date of Birth: 01/01/2011 Eye: Left
 Exam Date: 07/12/2021 Time: 11:11:55
 Exam Info:

Cornea Front

| | | | |
|-----------|---------|------|---------|
| R1 | 7.40 mm | K1 | 45.6 D |
| R2 | 5.00 mm | K2 | 53.4 D |
| Rm | 7.05 mm | Km | 47.9 D |
| Axis (Hk) | 11.5° | Asig | 4.8 D |
| Rper | 7.35 mm | Rmin | 6.62 mm |

Q5: OK
 Q-val (30°): -0.33

Cornea Back

| | | | |
|-----------|---------|------|---------|
| R1 | 5.18 mm | K1 | -5.9 D |
| R2 | 5.42 mm | K2 | -7.4 D |
| Rm | 5.80 mm | Km | -6.9 D |
| Axis (Hk) | 7.5° | Asig | 0.9 D |
| Rper | 5.13 mm | Rmin | 5.20 mm |

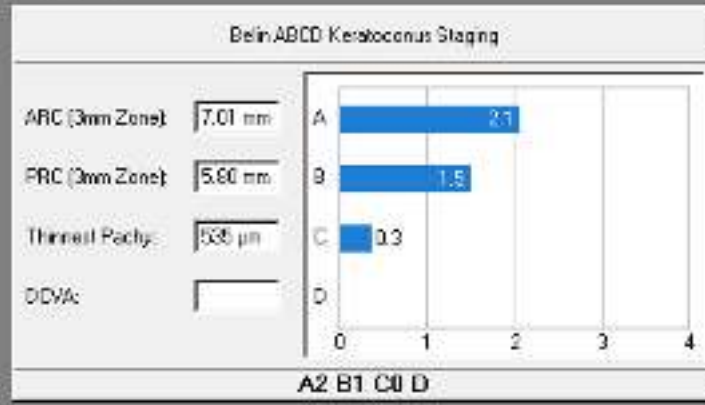
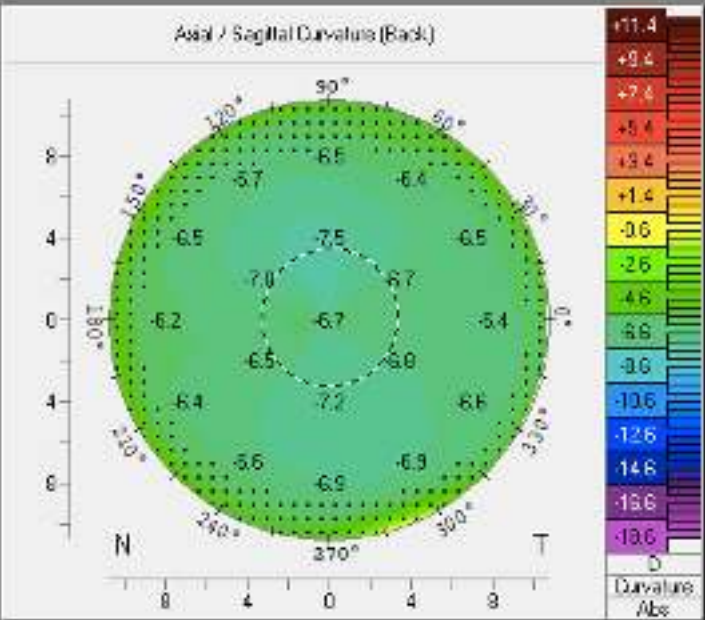
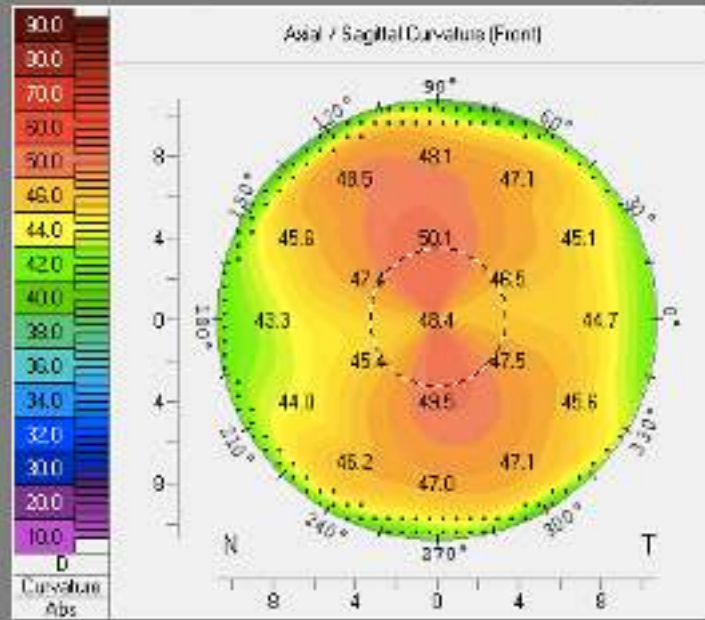
Q5: OK
 Q-val (30°): -0.15

True Net Power

| | | | |
|-----------|--------|----|--------|
| Asig | 4.5 D | K1 | 44.4 D |
| Axis (Hk) | 12.1° | K2 | 43.0 D |
| P.klav | 49.4 D | Km | 48.6 D |

| | | | | | |
|------------------|----------|-------|-------|-------|-------|
| Pupil Center: | + 536 μm | x(mm) | -0.02 | y(mm) | -0.06 |
| Pachy Apex: | 536 μm | | 0.00 | | 0.00 |
| Thinnest Locat.: | ○ 535 μm | | -0.42 | | -0.10 |
| K Max. (Front): | 51.0 D | | 0.12 | | -0.72 |

| | | | |
|--------------------|----------------------|------------|---------|
| Cornea Volume: | 52.6 mm ³ | Hx/Tx | 11.2 mm |
| Chamber Volume: | 170 mm ³ | Angle: | 42.0° |
| A. C. Depth (Int.) | 3.20 mm | Pupil Dia: | 3.35 mm |
| IOP(Sun): | +0.6 mmHg | Lens Th: | |

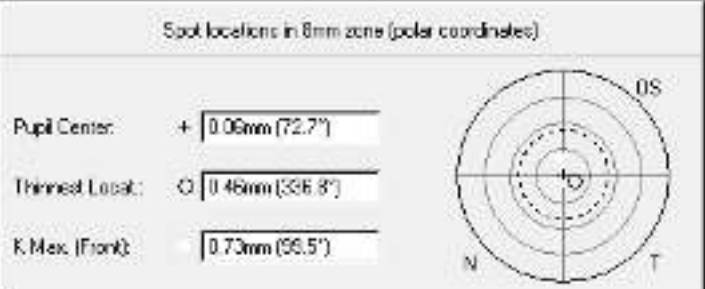
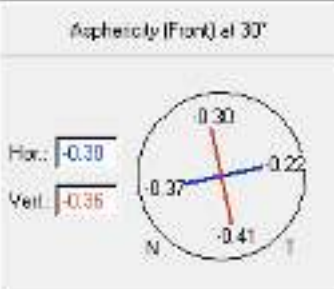


Asphericity (Front) of Major Meridians

| Q-val | Degree peripheral | | | | | Front: |
|-------|-------------------|-------|-------|-------|-------|--------------------|
| | 20° | 25° | 30° | 35° | 40° | |
| Max | -0.35 | -0.35 | -0.37 | -0.37 | -0.32 | ⊙ Asphericity |
| Temp | -0.14 | -0.15 | -0.22 | -0.30 | -0.30 | ○ Asial/Sag Curval |
| Inf | -0.40 | -0.40 | -0.41 | -0.45 | -0.43 | |
| Sup | -0.37 | -0.34 | -0.30 | -0.34 | -0.42 | ○ Asphericity |
| Mean | -0.32 | -0.31 | -0.33 | -0.37 | -0.38 | ○ Asial/Sag Curval |

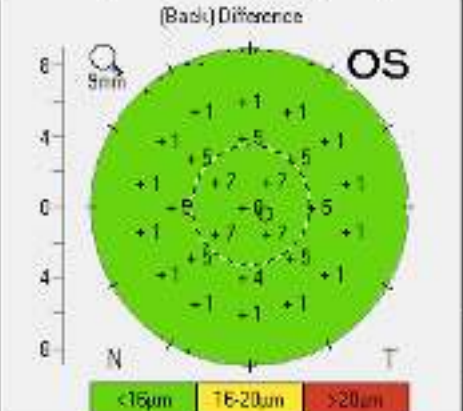
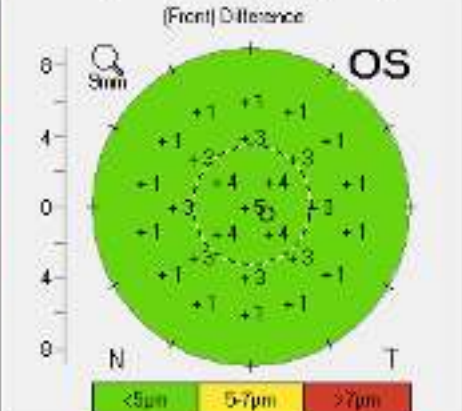
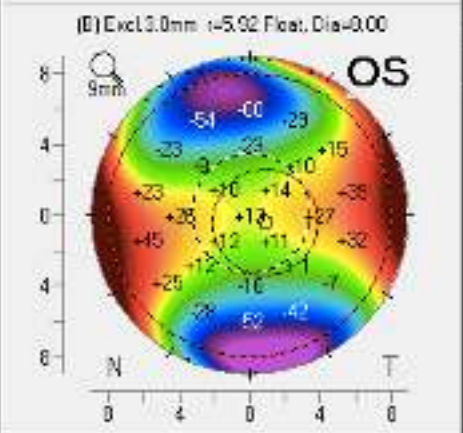
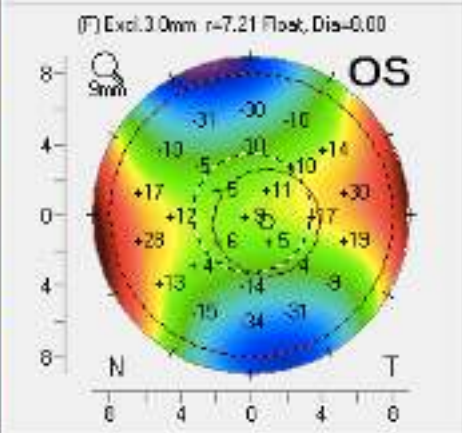
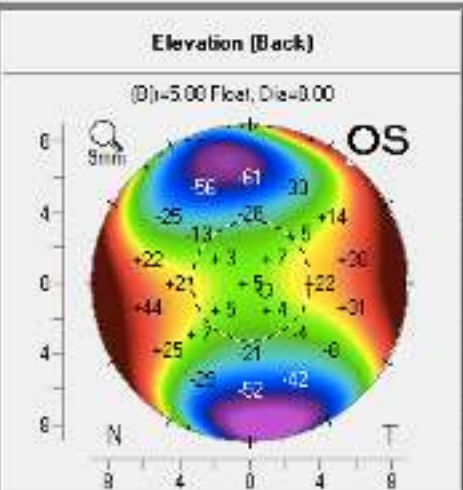
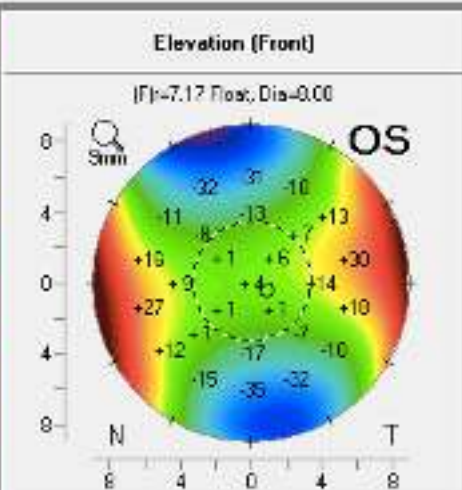
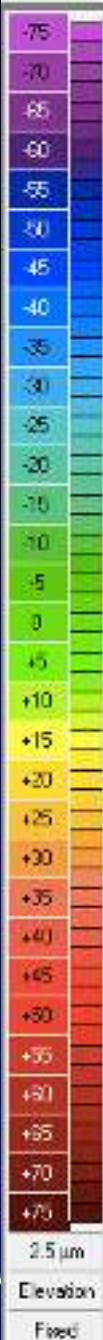
Indices (in 8mm zone)

| | | | |
|-------|-------|-------|---------|
| ISV: | 36 | IHA: | 4.9 |
| MA: | 0.12 | IHD: | 0.015 |
| K1: | 1.00 | RMin: | 6.62 |
| CKI: | 1.01 | TKC: | Abnorm. |
| KISA: | 5.721 | IS: | -0.64 |



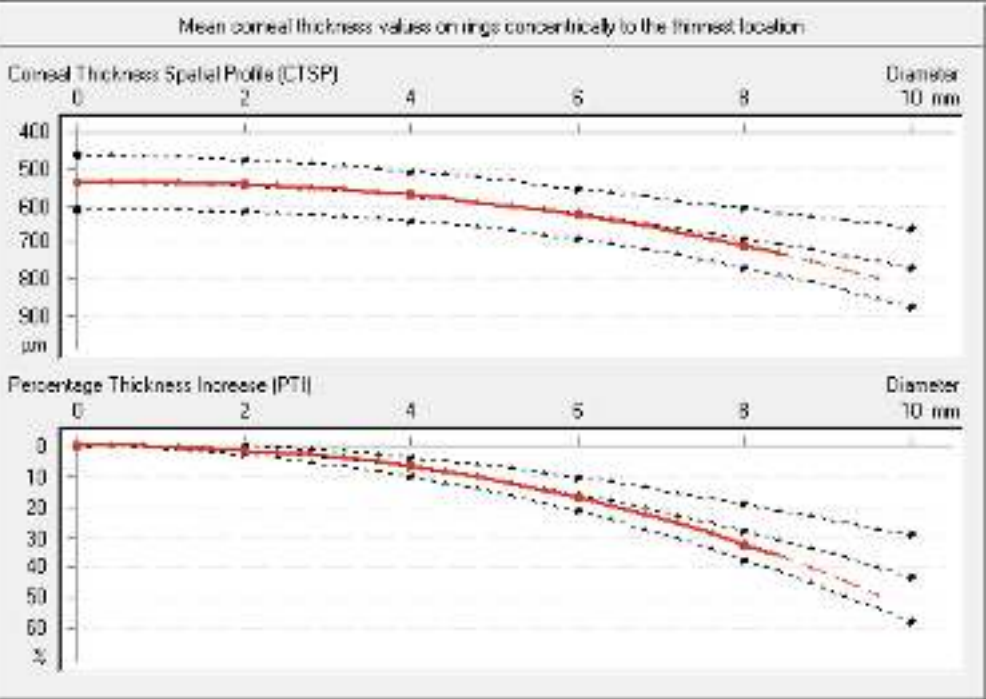
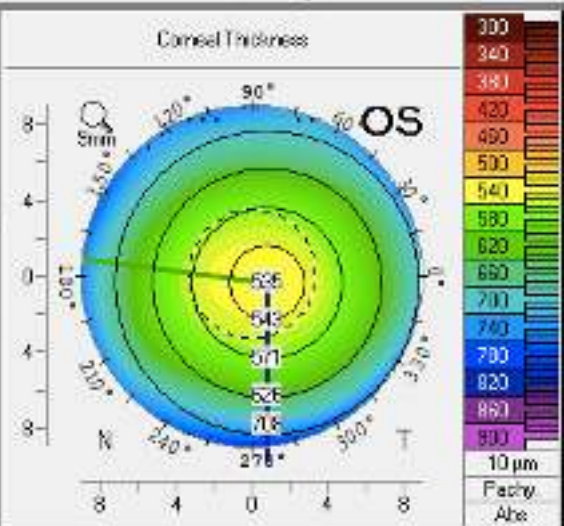
OCULUS - PENTACAM Belin/Ambrósio Enhanced Ectasia Display

1.23.09



Last Name: [Redacted]
 First Name: [Redacted]
 ID: [Redacted]
 Date of Birth: 01/01/2011 Eye: Left
 Exam Date: 07/12/2021 Time: 11:11:56
 Exam Info:

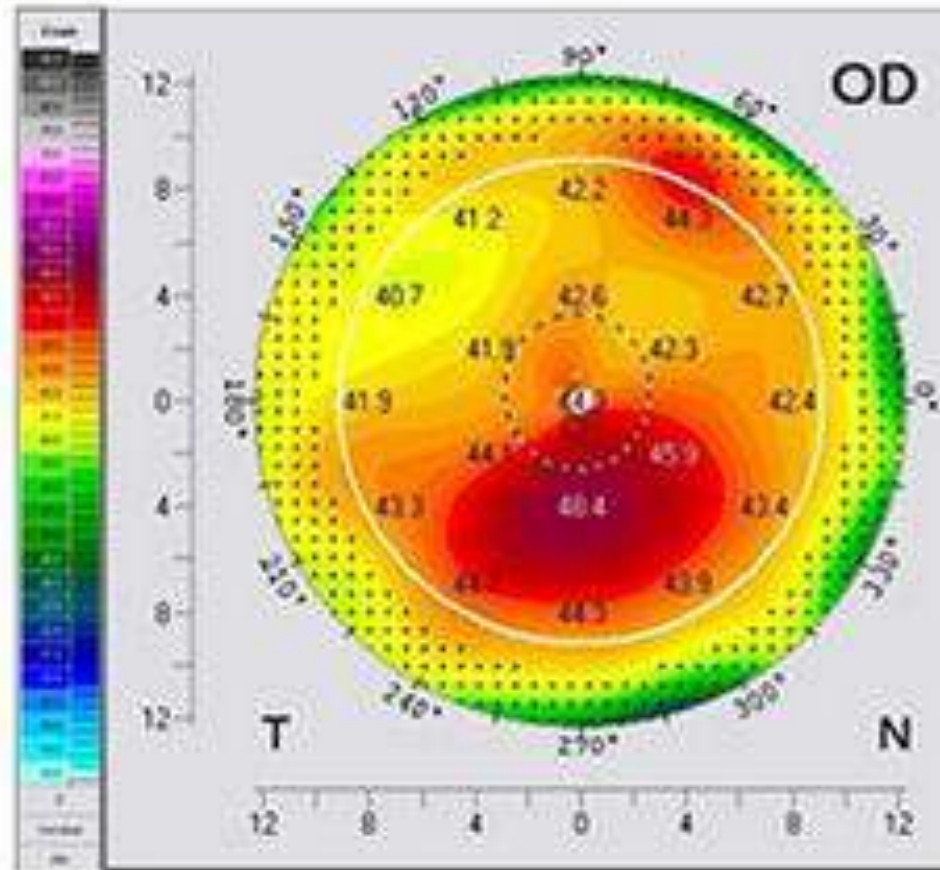
K1: 45.6D Axis: 11.5°
 K2: 50.4D D-val: -0.33
 KMax: 51.0D OS: OK
 Pachy Thin Local: 535 μ m
 Dist Apex Thin Loc: IT 0.45mm
 F.Ele.Th: 5 μ m B.Ele.Th: 6 μ m
 Progression Index
 Min: 0.60 Max: 1.13
 Avg: 0.99 ARTmax: 453



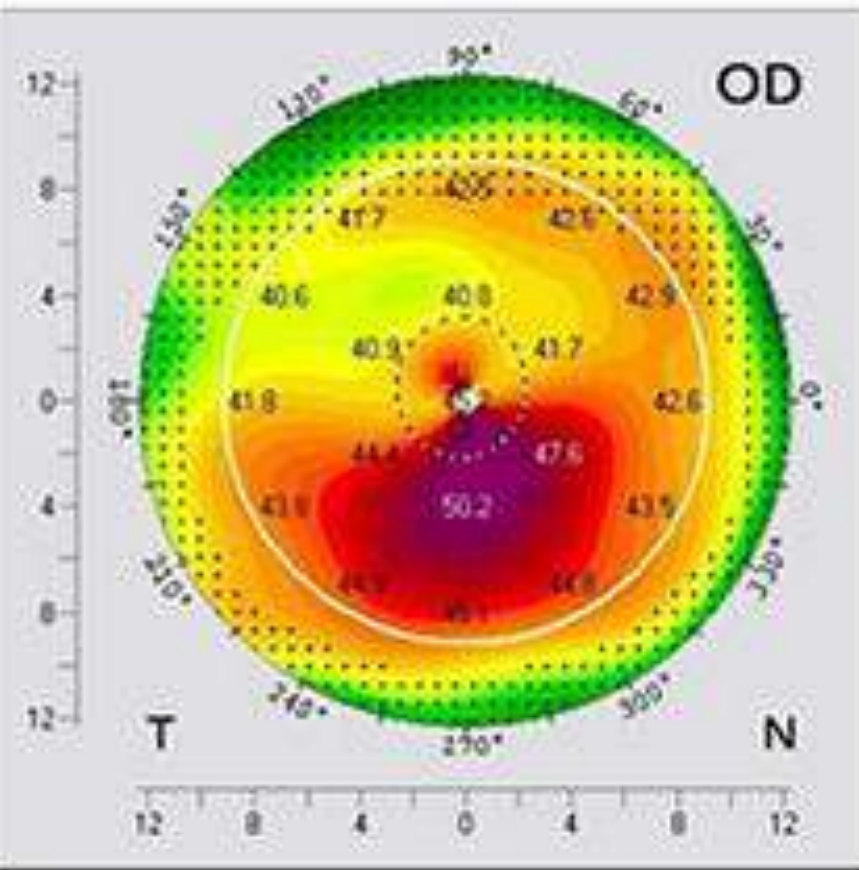
Reference Database: Myopic/Normal Hyperopic/Mixed Cst Literature

Dl: 1.40 Dv: -0.40 Dp: 0.59 Dt: 0.00 Ds: 0.32 D: 1.40

May 2009



August 2009



EOS 2025

EGYPTIAN OPHTHALMOLOGICAL SOCIETY

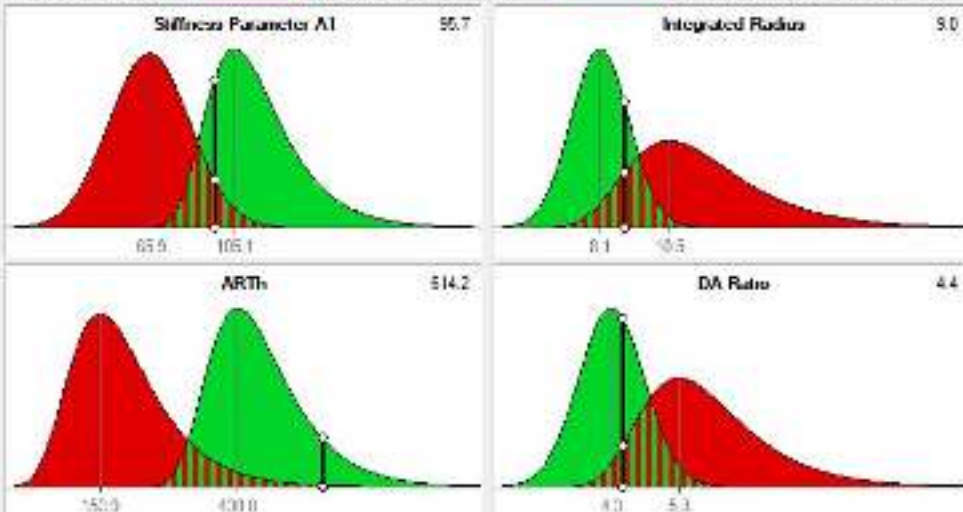
OCULUS Corvis® ST - Biomechanical/Tomographic Assessment (ARV)

1.512091

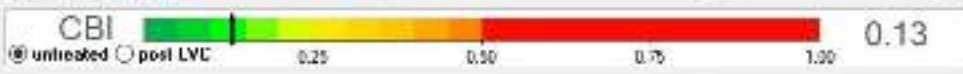
Name: [Redacted] ID: [Redacted] Date of birth: 01.01.2011 Age: 10
 Exam. Date: [Redacted] Time: 11:14:57 Eye: Left (OS) Exam. Date: 12.07.2021 Time: 11:11:55 Eye: Left (OS)
 Info: OS: OK Info: OS: OK

Corvis ST - Biomechanical Assessment

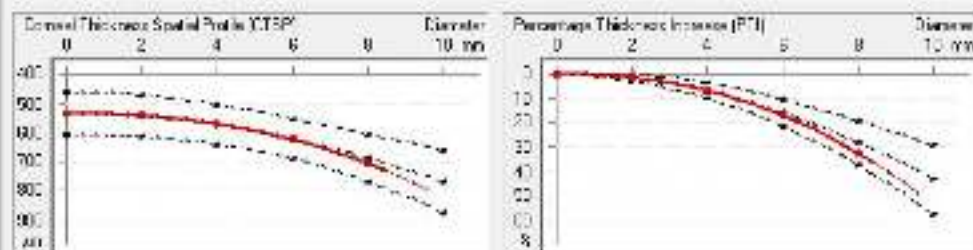
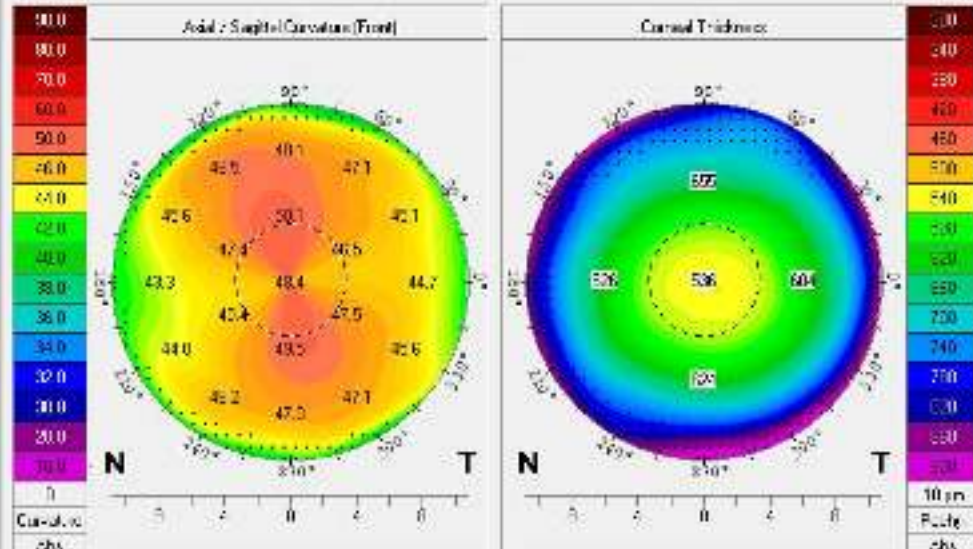
Distributions: █ NOHMAL Population █ KLHAI/CONUS Population



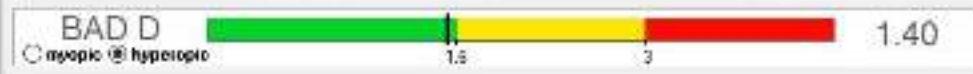
21.71 mm IOP_{rest}: 16.5 mmHg IOP: 16.8 mmHg



Pentacam - Tomographic Assessment



K Max.: 51.00 IS Value: 0.60 PRL: 0.02 TNC: [Redacted]



EOS 2
 EGYPTIAN

Oculus Optikgeräte GmbH
 Münchholzhäuser Str. 29

35582 Wetzlar

Tel: (0641) 20 05-0
 Fax: (0641) 20 05-255

www.oculus.de



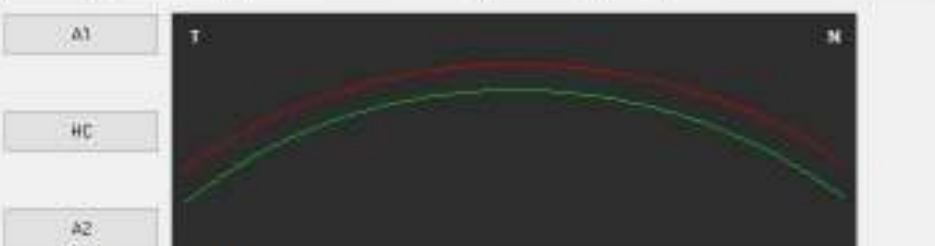
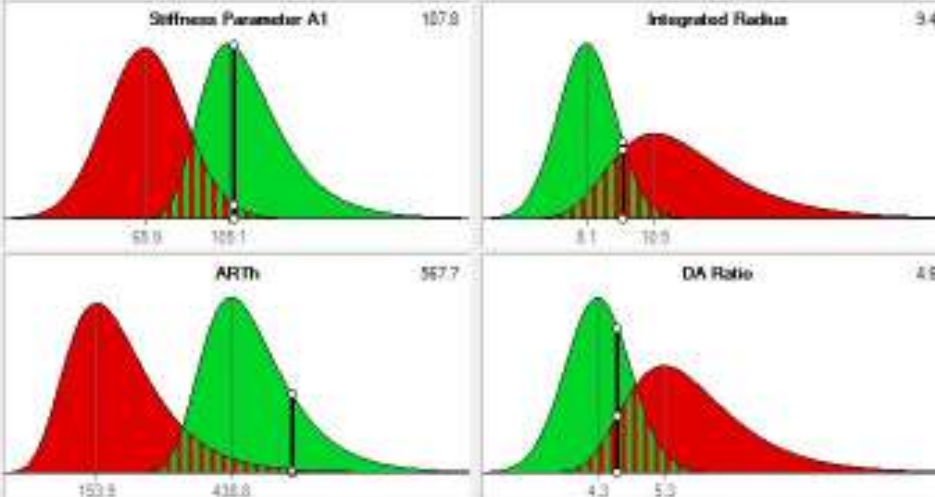
OCULUS Corvis® ST - Biomechanical/Tomographic Assessment (ARV)

162081

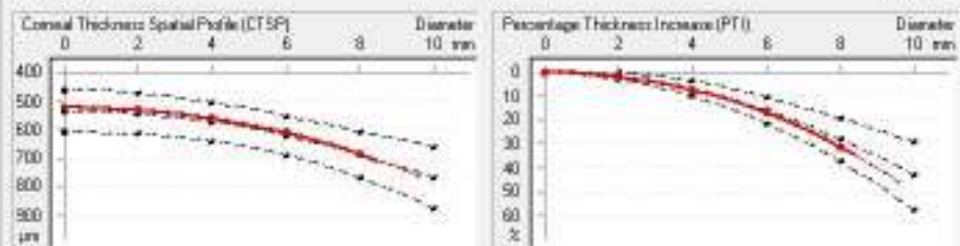
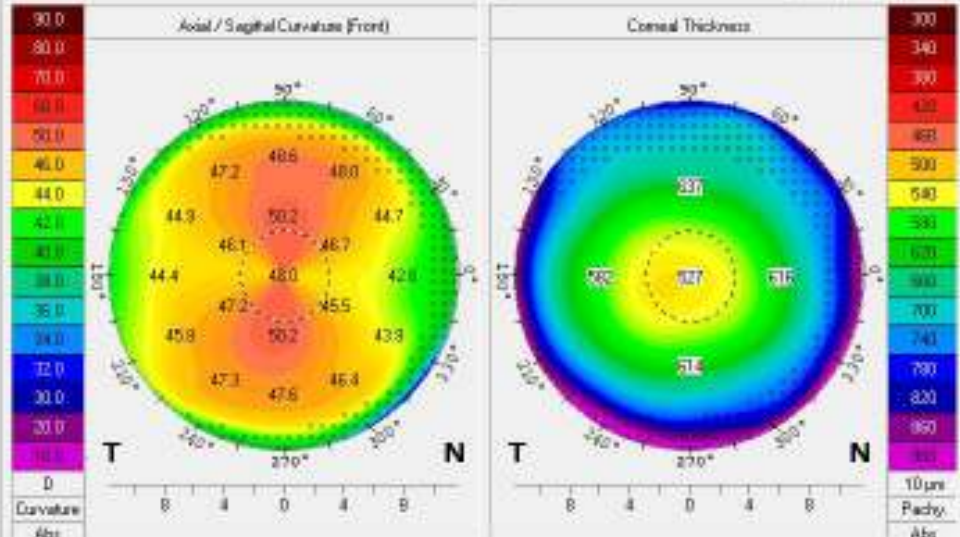
Name: [REDACTED] ID: [REDACTED] Date of birth: 01.01.2011 Age: 10
 Exam. Date: [REDACTED] Time: 11:14:17 Eye: Right (OD) Exam. Date: 12.07.2021 Time: 11:10:55 Eye: Right (OD)
 Info: [REDACTED] QS: OK Info: [REDACTED] QS: OK

Corvis ST - Biomechanical Assessment

Distributions: █ NORMAL Population █ KERATOCONUS Population



Pentacam - Tomographic Assessment



K Max: 51.10 IS Value: -0.10 PRFI: 0.07 TNC: Abnorm

BAD D: 2.23 (Scale: 1.0 to 3.0)

EOS 2
EGYPTIAN

Oculus Optikgeräte GmbH
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Fax: (0641) 20 05-255

www.oculus.de



Steep Cornea

EOS 2025

EGYPTIAN OPHTHALMOLOGICAL SOCIETY

OCULUS - PENTACAM 4 Maps Selectable

1.2915

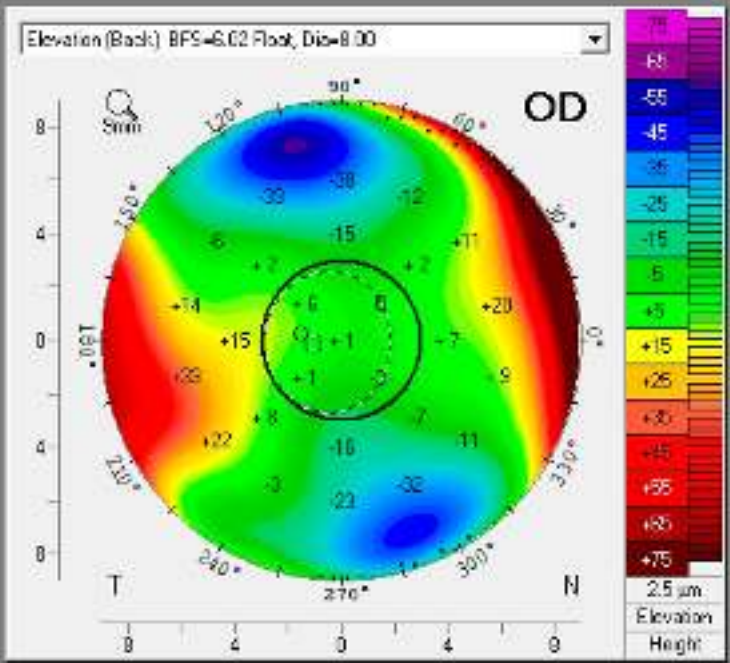
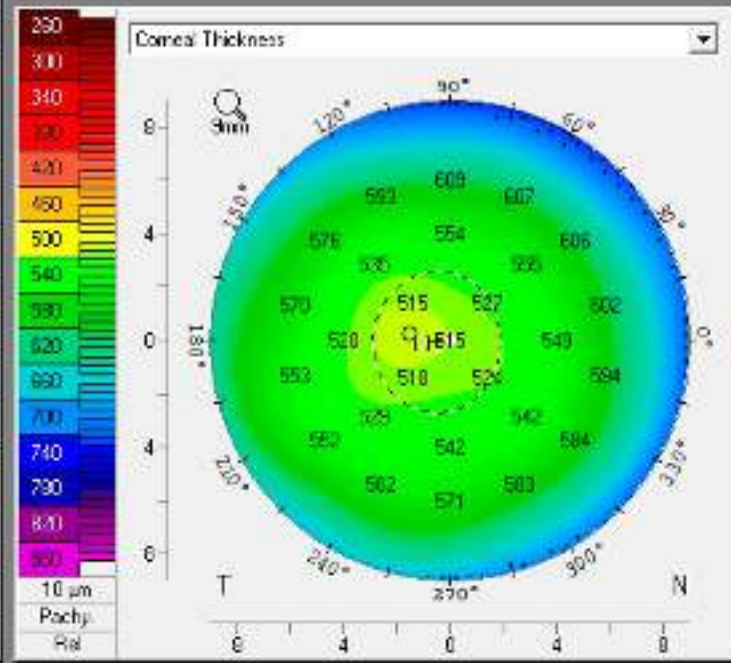
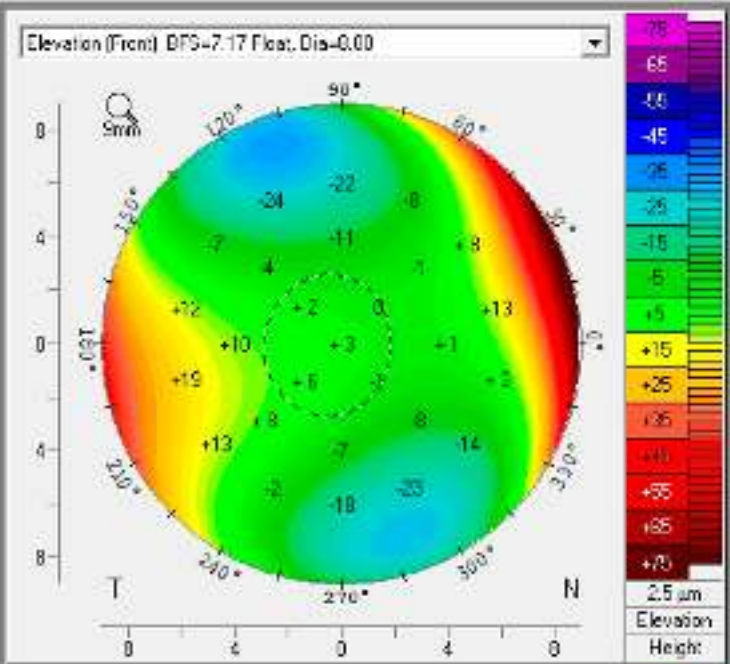
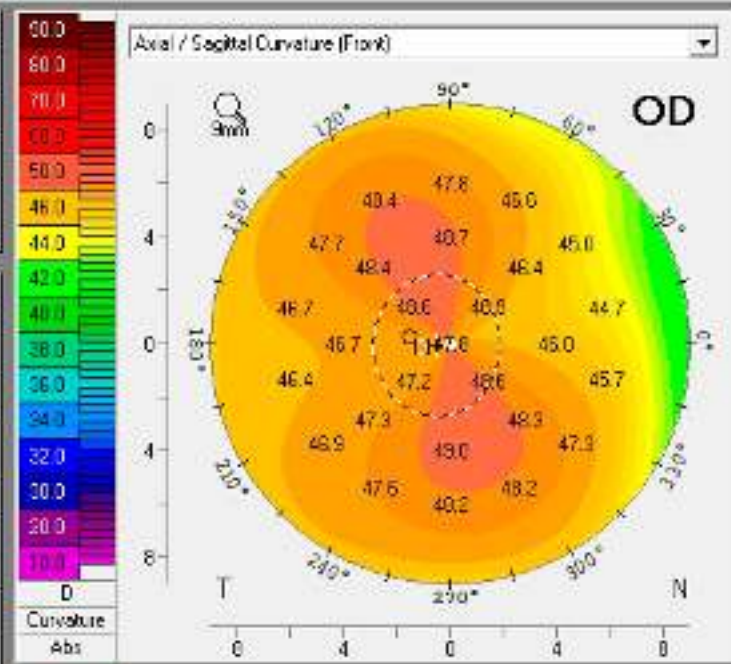
Last Name: XXXXXXXXXX
 First Name: XXXXXXXXXX
 ID: XXXXXXXXXX
 Date of Birth: 12/05/1996 Eye: Right
 Exam Date: 05/14/2023 Time: 09:07:59
 Exam Info:

| Cornea Front | | | |
|--------------|---------|-------------|---------|
| Rf: | 7.28 mm | K1: | 46.4 D |
| Rr: | 6.95 mm | K2: | 49.2 D |
| Rm: | 7.07 mm | Km: | 47.8 D |
| QS: | OK | Axis: (Deg) | 18.6° |
| Q-val (30°) | -0.06 | Asig: | 2.9 D |
| Rper: | 7.41 mm | Rmin: | 6.84 mm |

| Cornea Back | | | |
|-------------|---------|-------------|---------|
| Rf: | 6.21 mm | K1: | -6.4 D |
| Rr: | 5.74 mm | K2: | -7.0 D |
| Rm: | 5.98 mm | Km: | -6.7 D |
| QS: | OK | Axis: (Deg) | 4.9° |
| Q-val (30°) | -0.15 | Asig: | 0.5 D |
| Rper: | 6.21 mm | Rmin: | 5.57 mm |

| Pupil Center: | Pachy: | x(mm) | y(mm) |
|------------------|--------|-------|-------|
| + | 513 µm | -0.26 | -0.03 |
| Pachy-Vertex N.: | 515 µm | 0.00 | 0.00 |
| Thinnest Locat.: | 511 µm | -0.77 | +0.10 |
| K Max. (Front): | 49.4 D | +0.06 | -1.34 |

| | | | |
|----------------------|----------------------|------------|---------|
| Cornea Volume: | 59.0 mm ³ | INTW: | 11.0 mm |
| Chamber Volume: | 174 mm ³ | Angle: | 41.5° |
| A. C. Depth (Int.): | 3.11 mm | Pupil Dia: | 2.51 mm |
| Enter IOP (IDP/Sum): | +21 mmHg | Lens Th.: | |



OCULUS - PENTACAM Topometric/KC-Staging

1.25/15

Last Name: XXXXXXXXXX
 First Name: XXXXXXXXXX
 ID: XXXXXXXXXX
 Date of Birth: 12/05/1998 Eye: Right
 Exam Date: 05/14/2023 Time: 09:07:59
 Exam Info:

Cornea Front



| | | | |
|--------|---------|-------|---------|
| Rf: | 7.20 mm | K1: | 46.4 D |
| Ra: | 5.85 mm | K2: | 49.2 D |
| Rm: | 7.07 mm | Km: | 47.0 D |
| Qs: | OK | Asig: | 2.9 D |
| Q val: | -0.36 | Rper: | 7.41 mm |
| | | Rmir: | 6.04 mm |

Cornea Back



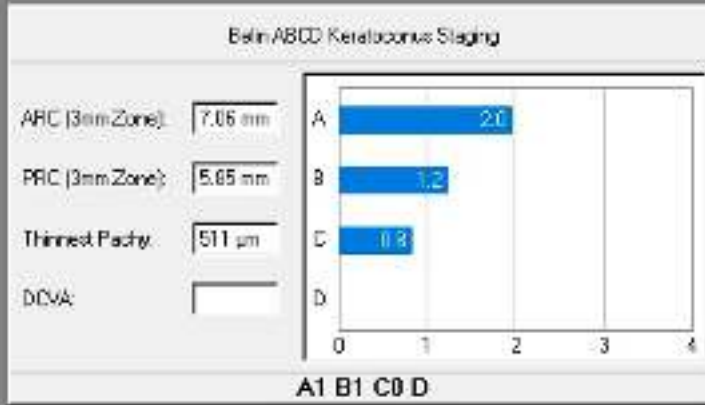
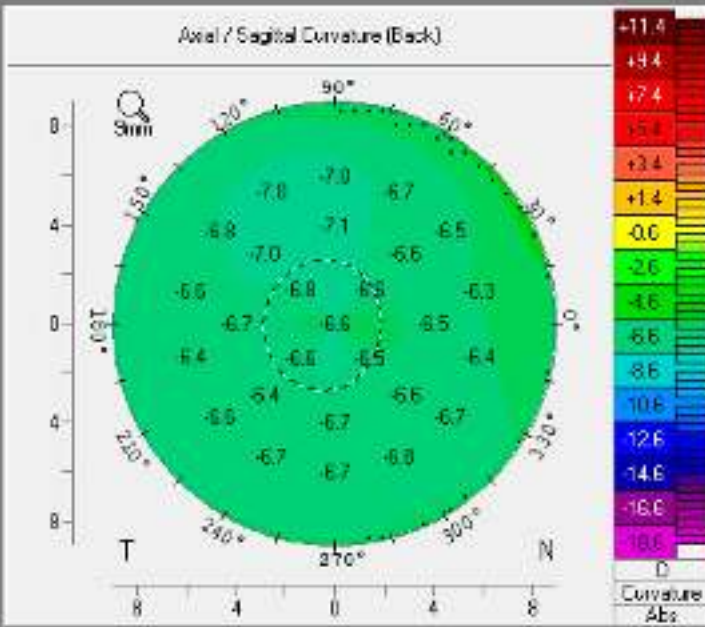
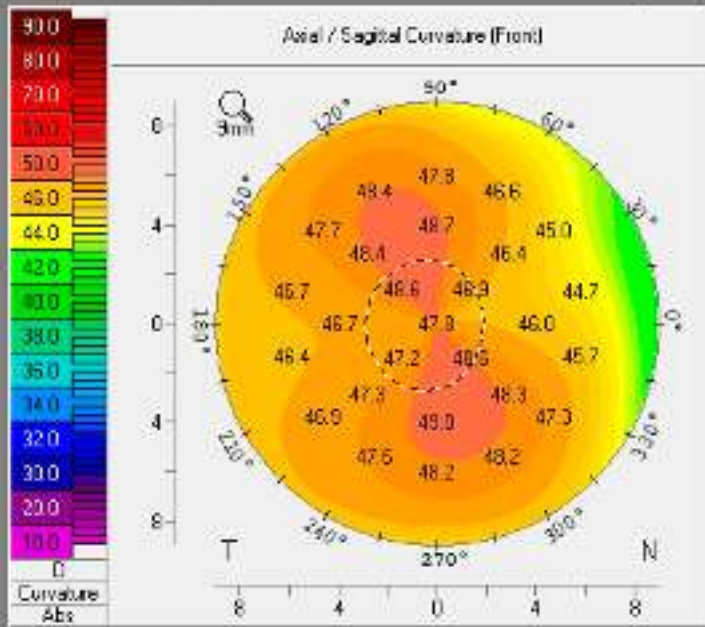
| | | | |
|--------|---------|-------|---------|
| Rf: | 5.21 mm | K1: | -6.4 D |
| Ra: | 5.74 mm | K2: | 7.0 D |
| Rm: | 5.98 mm | Km: | -6.7 D |
| Qs: | OK | Asig: | 0.5 D |
| Q val: | -0.15 | Rper: | 5.21 mm |
| | | Rmir: | 5.57 mm |

True Net Power



| | | | |
|--------|--------|-----|--------|
| Asig: | 2.7 D | K1: | 45.2 D |
| Axis: | 18.0° | K2: | 47.9 D |
| P-Max: | 48.2 D | Km: | 46.5 D |

| | | | | | |
|---------------------|----------|------------|---------|-------|-------|
| Pupil Center: | + 513 µm | x(mm) | -0.26 | y(mm) | -0.03 |
| Pachy Vertex N.: | - 515 µm | x(mm) | 0.00 | y(mm) | 0.00 |
| Thinnest Locat.: | ○ 511 µm | x(mm) | -0.77 | y(mm) | +0.13 |
| K Max. (Front): | 49.4 D | x(mm) | +0.38 | y(mm) | -1.34 |
| Cornea Volume: | 58.3 mm³ | HW/TW: | 11.3 mm | | |
| Chamber Volume: | 174 mm³ | Angle: | 41.5° | | |
| A. C. Depth (Int.): | 3.11 mm | Pupil Dia: | 2.51 mm | | |
| IOP(Sum): | +21 mmHg | Lens Th: | | | |

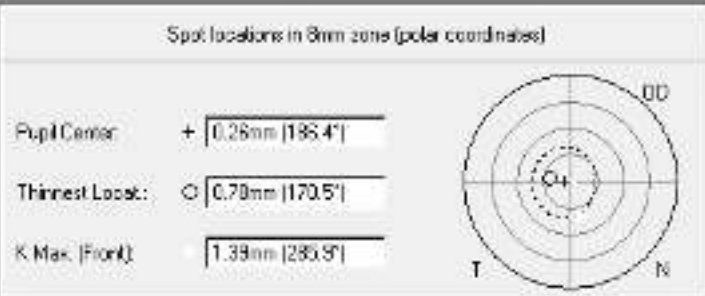


Asphericity (Front) of Major Meridians

| | Degree peripheral | | | | | |
|---------|-------------------|-------|-------|-------|-------|--|
| (Q-val) | 20° | 25° | 30° | 35° | 40° | Front |
| Nas | -0.52 | -0.58 | -0.62 | -0.61 | -0.52 | <input checked="" type="radio"/> Asphericity |
| Temp | -0.07 | -0.08 | -0.10 | -0.12 | -0.18 | <input type="radio"/> Axial/Sag Curve |
| Inf | -0.27 | -0.32 | -0.37 | -0.45 | -0.61 | <input type="radio"/> Asphericity |
| Sup | -0.22 | -0.27 | -0.32 | -0.42 | -0.64 | <input type="radio"/> Axial/Sag Curve |
| Mean | -0.27 | -0.31 | -0.36 | -0.40 | -0.49 | |

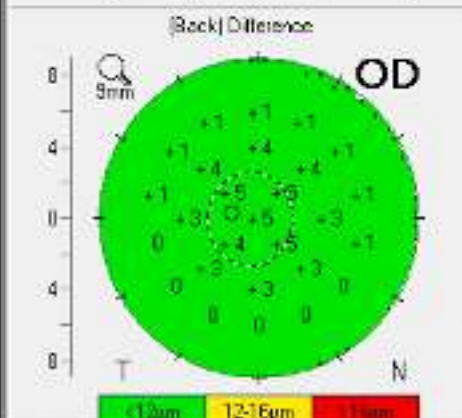
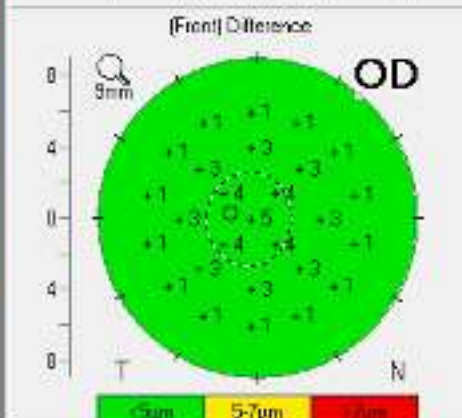
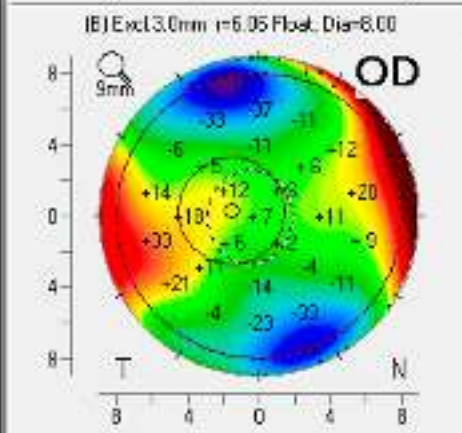
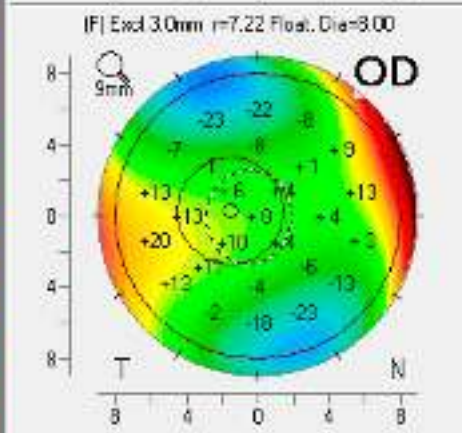
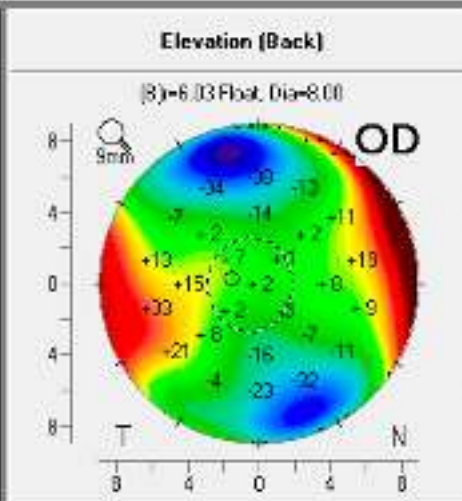
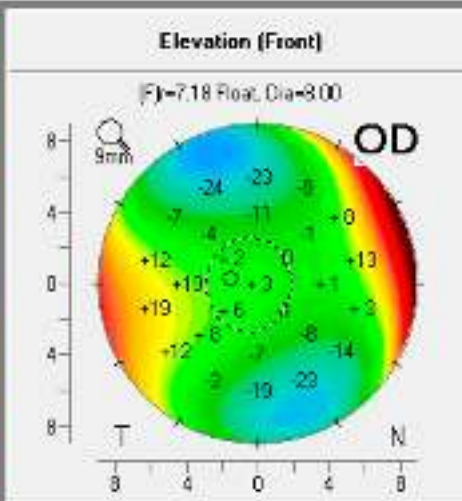
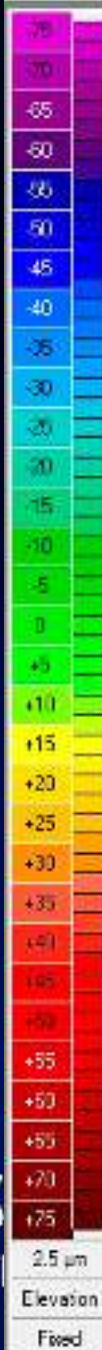
Indices (in 8mm zone)

| | | | |
|-------|------|-------|-------|
| ISV: | 29 | IHA: | 6.1 |
| IVA: | 314 | IHD: | 0.014 |
| KI: | 1.03 | RMir: | 6.04 |
| CKI: | 1.01 | TKC: | |
| KISA: | 2688 | IS: | 0.53 |



OCULUS - PENTACAM Belin/Ambrósio Enhanced Ectasia Display

1.25/15

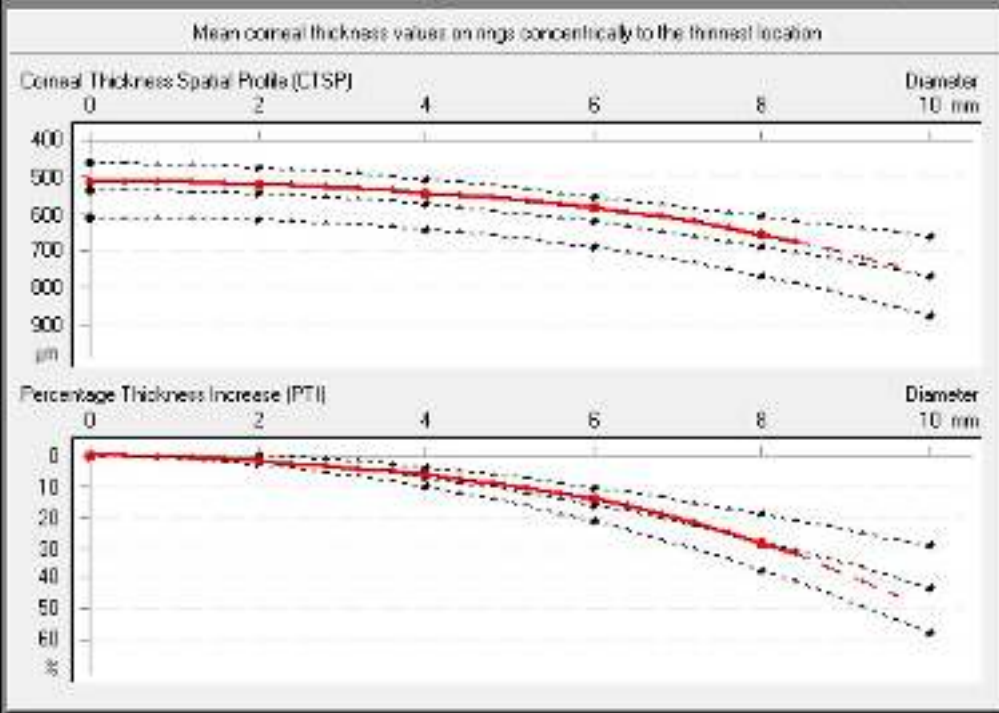
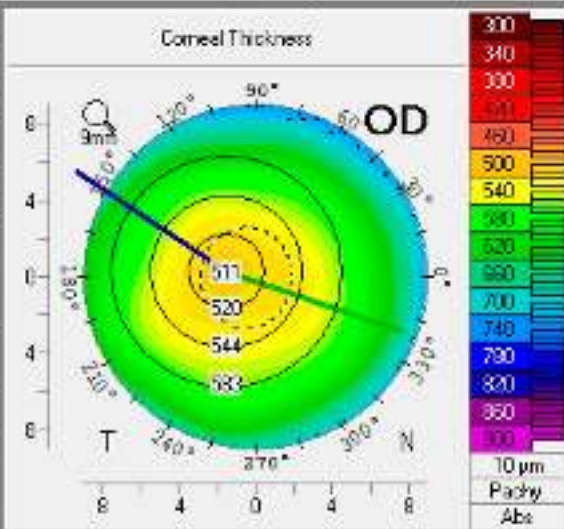


Last Name: [Redacted]
 First Name: [Redacted]
 ID: [Redacted]
 Date of Birth: 12/05/1996 Eye: Right
 Exam Date: 05/14/2023 Time: 09:07:59
 Exam Info: [Redacted]

| | | | |
|------|-------|---------|-------|
| K1 | 45.40 | Axis | 16.5° |
| K2 | 49.20 | Crystal | -0.36 |
| KMax | 49.40 | OS | OK |

Pachy Thin. Locat: 511 μm
 Dist. Vertex N-Thin Loc.: ST 0.79mm
 F.Ele.Th: 5 μm 8.Ele.Th: 8 μm

Progression Index:
 Min: 0.58 Max: 1.27
 Avg: 0.92 ARTmax: 402



Reference Database: Myopic/Normal Hyperopic/Mixed Cyl Literature

| | | | | | | | | | | | |
|----|------|----|-------|----|------|----|------|----|------|----|------|
| Dt | 1.31 | Db | -0.17 | Dp | 0.09 | Dt | 0.60 | Da | 0.78 | Ds | 1.44 |
|----|------|----|-------|----|------|----|------|----|------|----|------|

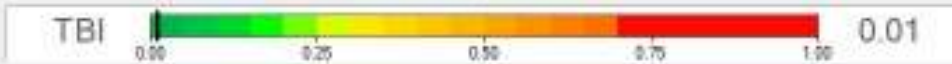
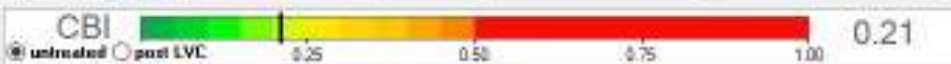
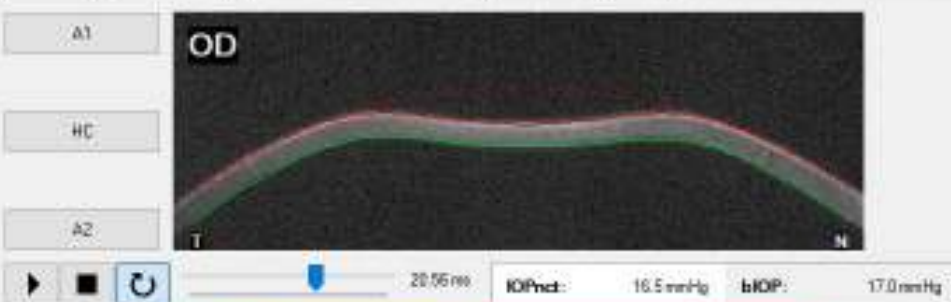
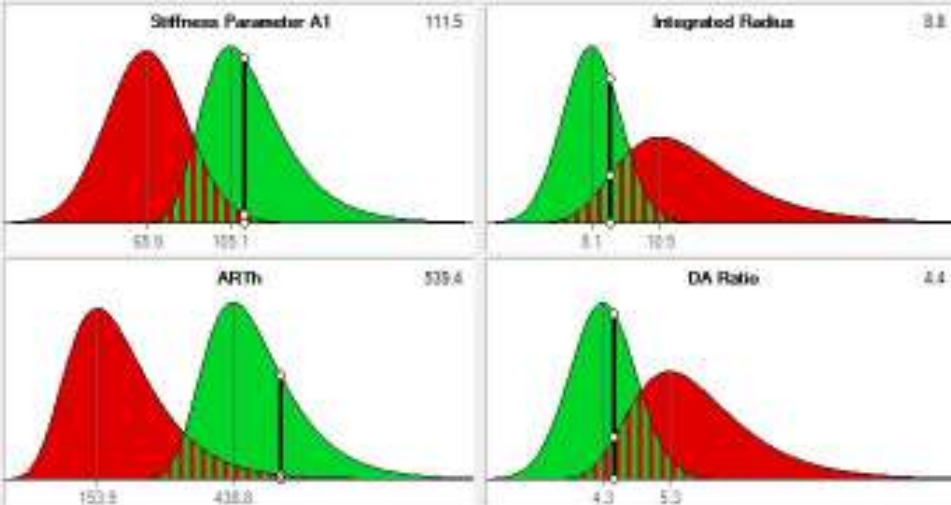
OCULUS Corvis® ST - Biomechanical/Tomographic Assessment (ARV)

162503

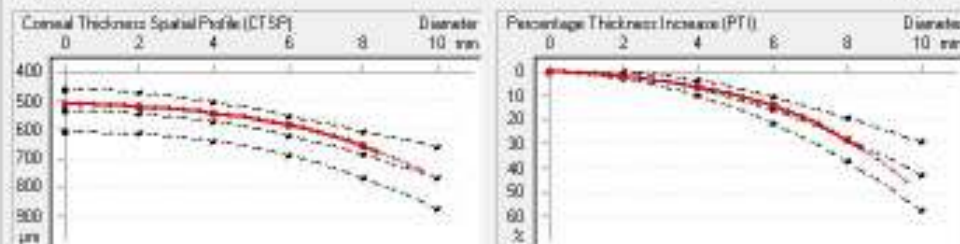
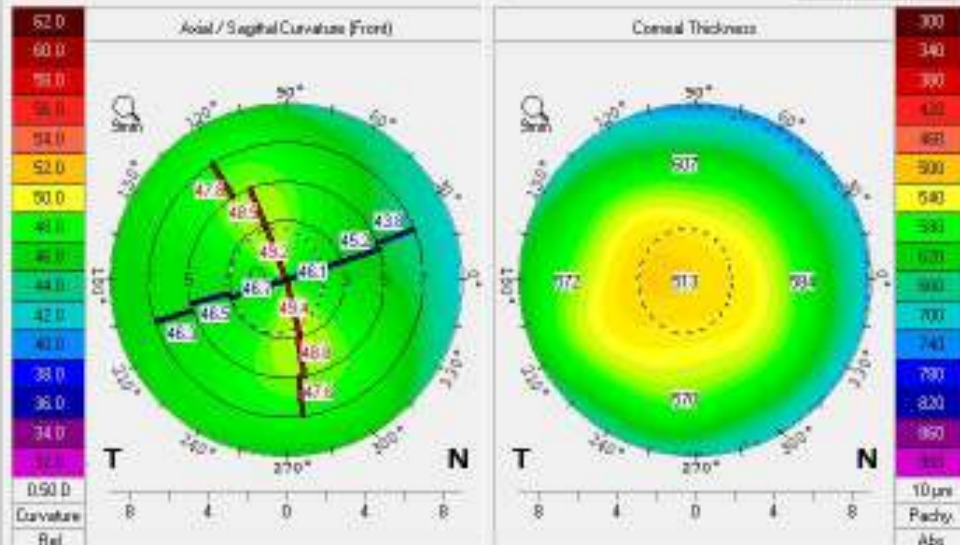
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|-------------|------------|-------|----------|----------------|------------|-------------|------------|
| Name: | [REDACTED] | ID: | | Date of birth: | 05.12.1996 | Age: | 26 |
| Exam. Date: | [REDACTED] | Time: | 09:11:14 | Eye: | Right (OD) | Exam. Date: | 14.05.2023 |
| Info: | | OS: | OK | Time: | 09:07:59 | Eye: | Right (OD) |
| | | | | Info: | | OS: | OK |

Corvis ST - Biomechanical Assessment

Distributions: █ NORMAL Population █ KERATOCONUS Population



Pentacam - Tomographic Assessment



K Max.: 49.4 D IS Value: 0.5 D PRFI: 0.03 TNC:

BAD D 1.44

Ⓜ myopic ○ hyperopic

Steep Cornea

EOS 2025

EGYPTIAN OPHTHALMOLOGICAL SOCIETY

OCULUS - PENTACAM 4 Maps Selectable

1.25x15

Last Name: [REDACTED]
 First Name: [REDACTED]
 ID: [REDACTED]
 Date of Birth: 05/16/2004 Eye: Right
 Exam Date: 07/06/2021 Time: 13:14:37
 Exam Info:

Cornea Front

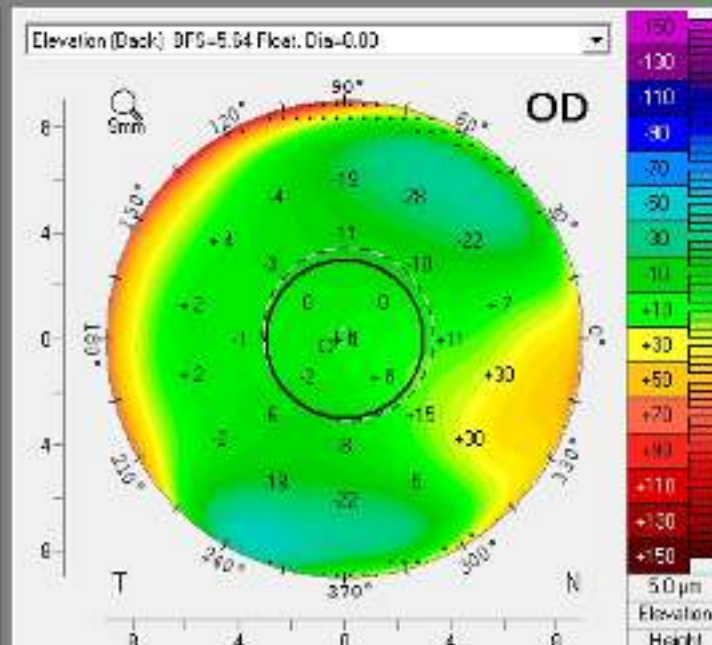
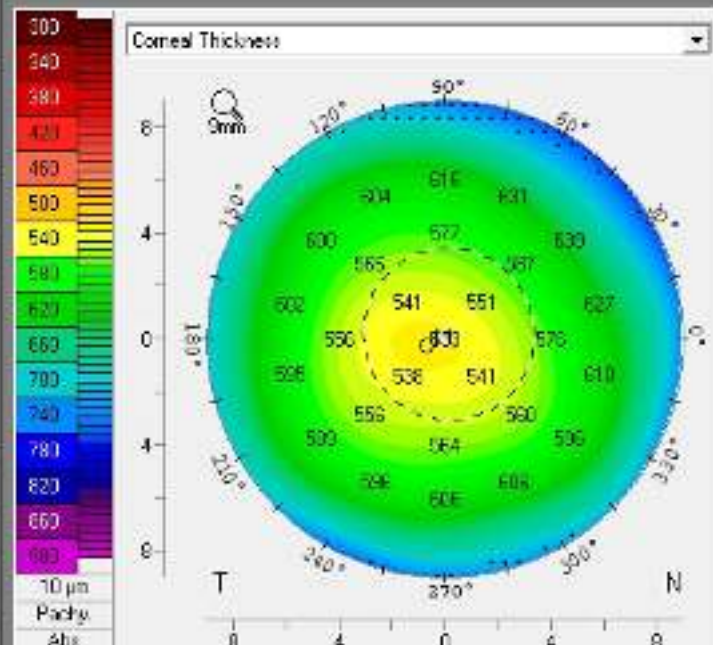
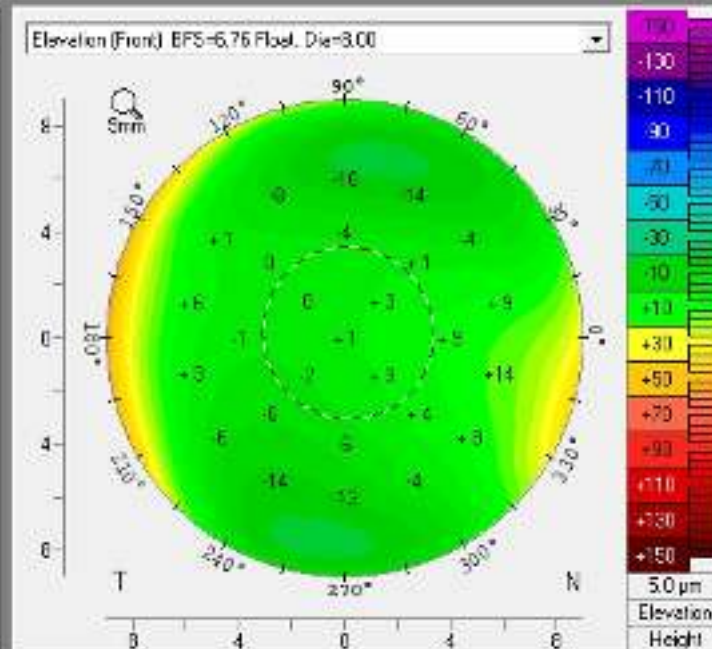
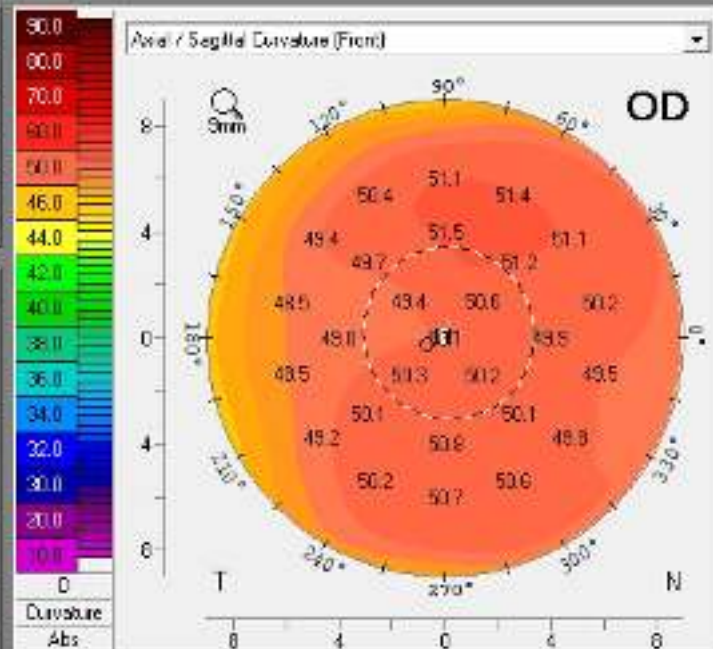
| | | | |
|--------------|--|-------------|---------|
| Rt: | 6.83 mm | K1: | 49.4 D |
| Rs: | 6.61 mm | K2: | 51.0 D |
| Rm: | 6.72 mm | Km: | 50.2 D |
| OS: | <input checked="" type="checkbox"/> OK | Axis (Int): | 165.9° |
| D-val: [30°] | -0.18 | Asig: | 1.5 D |
| Rper: | 6.95 mm | Rmix: | 6.51 mm |

Cornea Back

| | | | |
|--------------|--|-------------|---------|
| Rt: | 5.71 mm | K1: | -7.0 D |
| Rs: | 5.42 mm | K2: | -7.4 D |
| Rm: | 5.57 mm | Km: | -7.2 D |
| OS: | <input checked="" type="checkbox"/> OK | Axis (Int): | 160.0° |
| D-val: [30°] | -0.14 | Asig: | 0.4 D |
| Rper: | 5.81 mm | Rmix: | 5.19 mm |

| | | | | | |
|------------------|----------|-------|-------|-------|-------|
| Pupil Center: | + 534 μm | x[mm] | +0.07 | y[mm] | +0.09 |
| Pachy Vertex N.: | - 533 μm | x[mm] | 0.00 | y[mm] | 0.00 |
| Thinnest Locat.: | ○ 532 μm | x[mm] | -0.35 | y[mm] | -0.12 |
| K Max. (Front): | 51.3 D | x[mm] | +0.59 | y[mm] | +2.30 |

| | | | |
|-----------------------|----------------------|------------|---------|
| Cornea Volume: | 62.2 mm ³ | Hv (Hv) | 11.0 mm |
| Chamber Volume: | 121 mm ³ | Angle: | 32.5° |
| A. C. Depth (Int.): | 2.48 mm | Pupil Dia: | 3.23 mm |
| Enter IOP IOP(Sum): | +0.9 mmHg | Lens Th.: | |



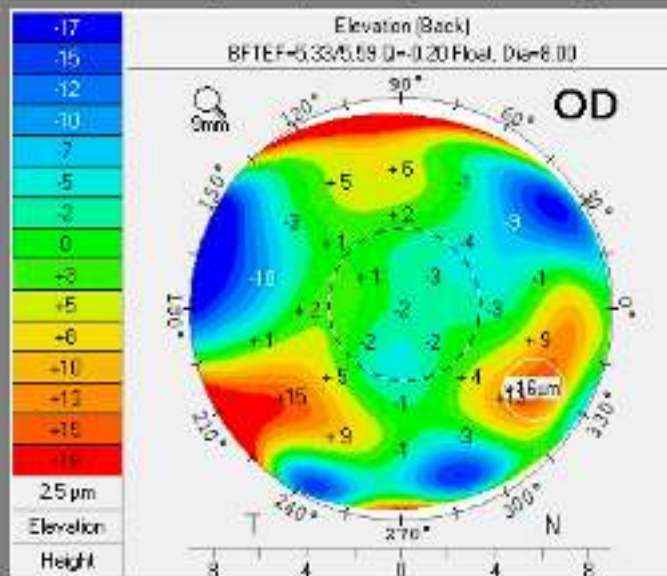
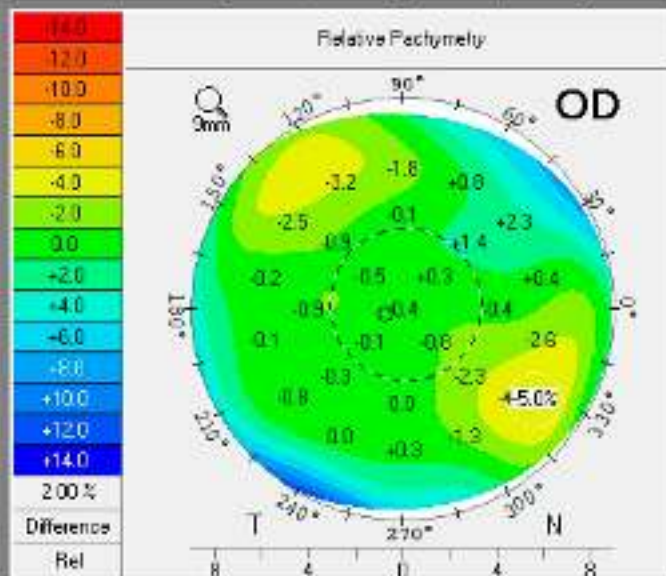
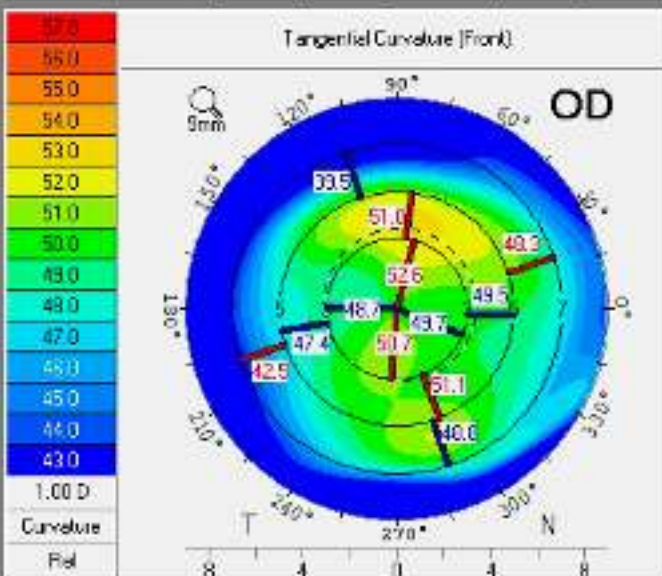
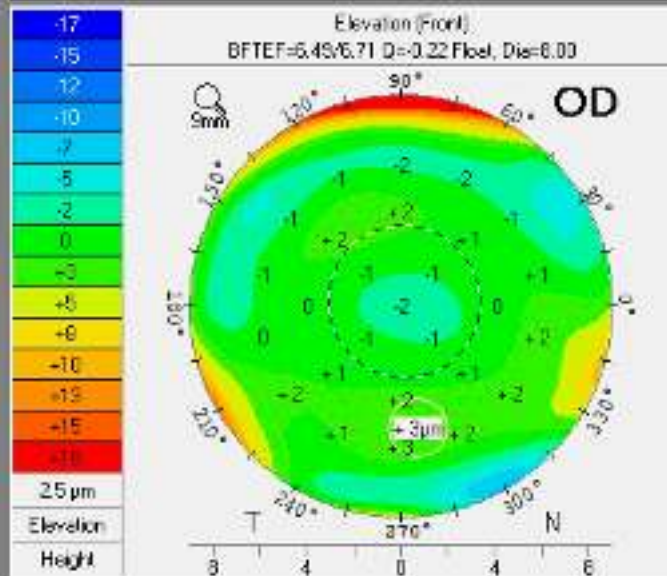
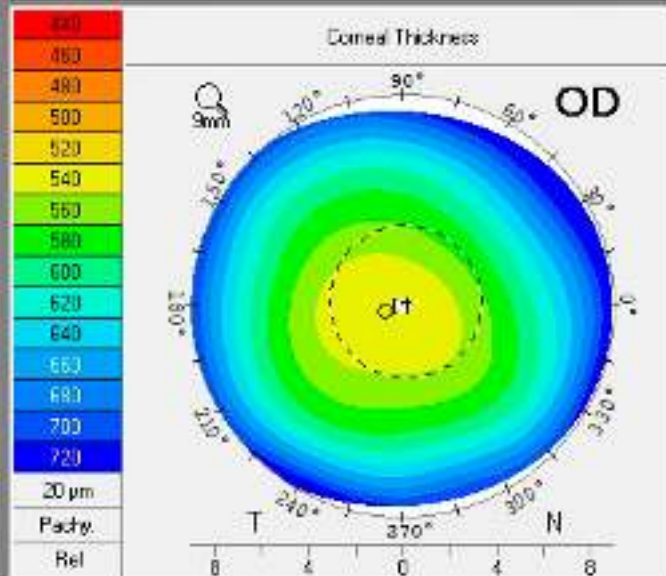
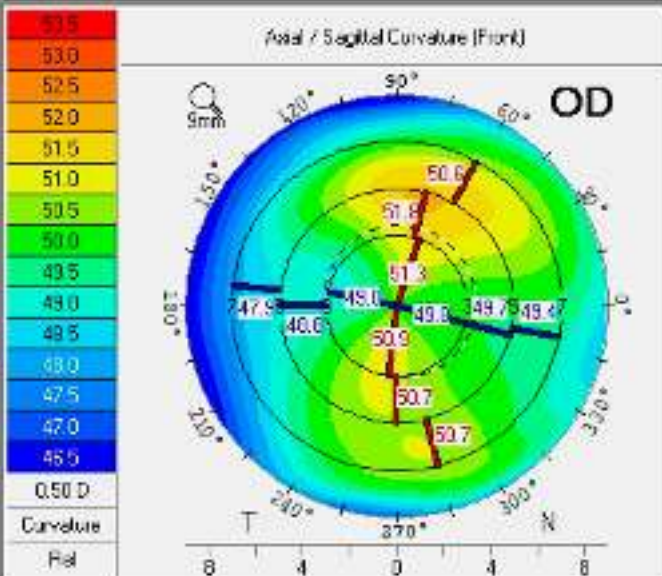
OCULUS - PENTACAM Holladay Report

1.25:15

Last Name: XXXXXXXXXX
 First Name: XXXXXXXXXX
 ID: XXXXXXXXXX
 Date of Birth: 05/16/2004 Eye: Right
 Exam Date: 07/06/2021 Time: 10:14:37

| Equiv K-Readings 65 (4.5mm Zone) | | | |
|----------------------------------|----------------|----------------------|----------|
| EKR65 Flat K1 | 43.25 D (169°) | D (5.0mm) | -0.12 |
| EKR65 Steep K2 | 50.07 D (79°) | Total SA: 2(4+6+0.0) | +0.542 μ |
| EKR65 Mean | 50.06 D | Radial Ratio (B/F) | 92.9% |
| Astig EKR65 | 1.82 D | RMS HOA w/E (6mm) | 0.742 μm |

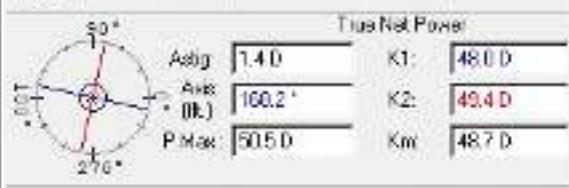
| | | | |
|-------------------|-------------|-------------|------------------------|
| Pupil Dia | + 3.23 mm | x 0.07 mm H | y: 0.09 mm S (rel. VN) |
| HWTW: | () 11.0 mm | x 0.03 mm T | y: 0.02 mm S (rel. VN) |
| Pachy Min: | ○ 532 μm | x 0.35 mm T | y: 0.12 mm I (rel. VN) |
| Est. Pta-Fish. K1 | 49.8 D | Rel. Charge | +0.4 D |
| ADD (Est.) | 3.00 mm | Chord μ | 0.11 mm OS OK |



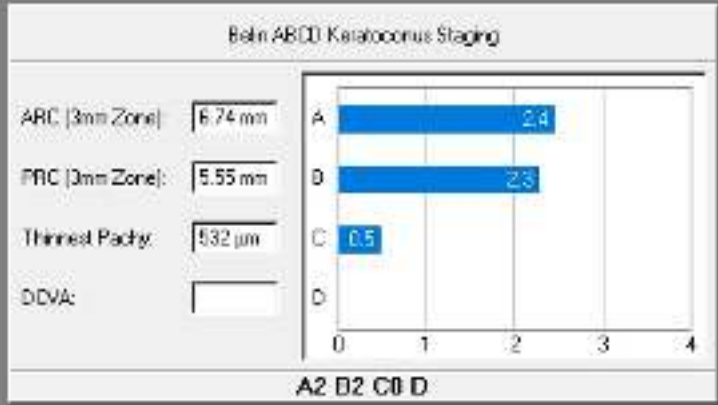
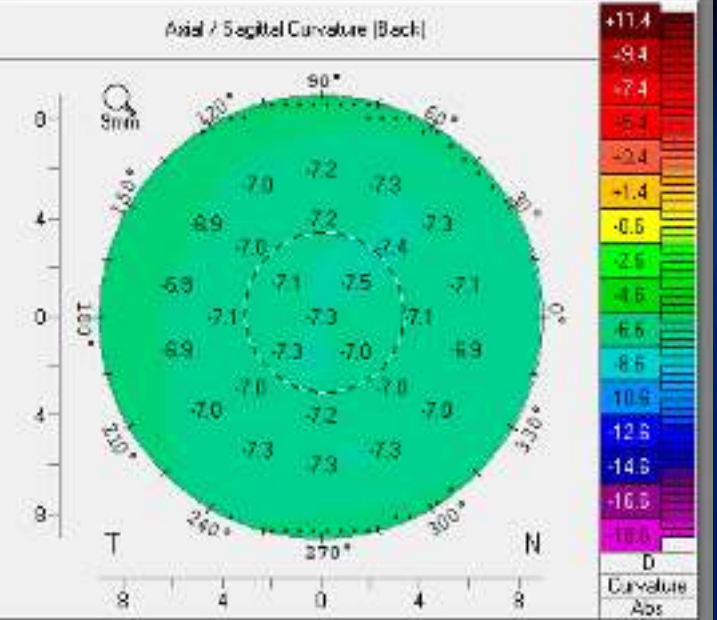
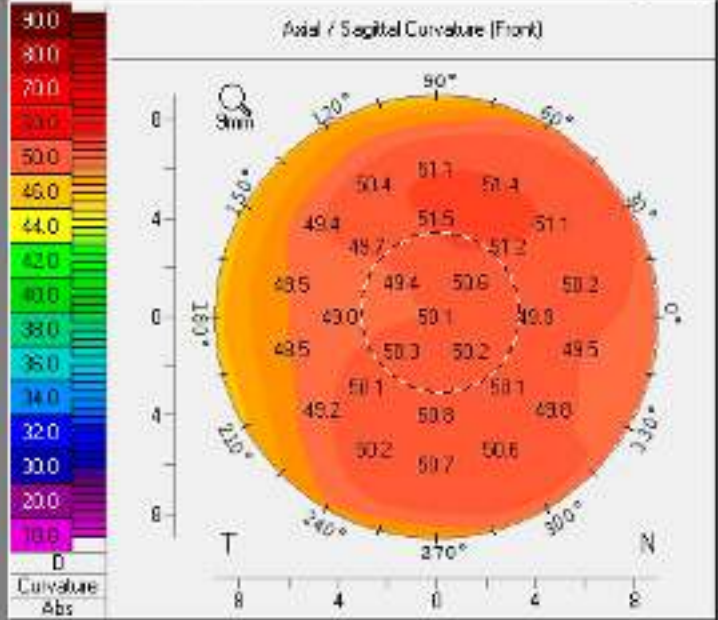
OCULUS - PENTACAM Topometric/KC-Staging

1.25:15

Last Name: [REDACTED]
 First Name: [REDACTED]
 ID: [REDACTED]
 Date of Birth: 05/18/2004 Eye: Right
 Exam Date: 07/06/2021 Time: 10:14:37
 Exam Info:



| | | | | | |
|---------------------|----------------------|------------|---------|--------|-------|
| Pupil Center: | + 534 µm | + [mm] | +0.07 | + [mm] | +0.09 |
| Pachy/Vortex N: | - 533 µm | - [mm] | 0.00 | - [mm] | 0.00 |
| Thinnest Local: | ○ 532 µm | ○ [mm] | -0.35 | ○ [mm] | -0.12 |
| K Max (Front): | 51.8 D | [mm] | +0.59 | [mm] | +2.30 |
| Cornea Volume: | 62.2 mm ³ | Hv/1W: | 11.0 mm | | |
| Chamber Volume: | 121 mm ³ | Angle: | 32.5° | | |
| A. C. Depth (Int.): | 2.46 mm | Pupil Dia: | 3.23 mm | | |
| IOP(Sum): | -0.9 mmHg | Lens Th: | | | |

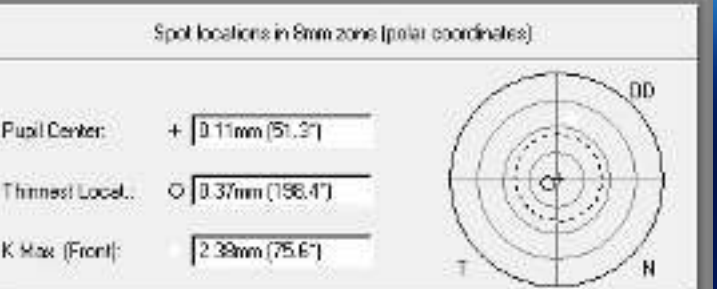
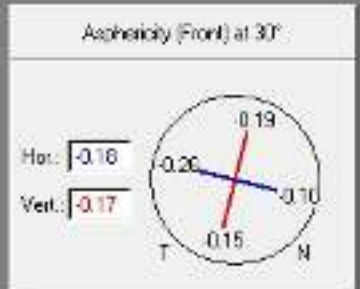


Asphericity (Front) of Major Meridians

| ID-val. | Degrees peripheral | | | | | Front |
|---------|--------------------|-------|-------|-------|-------|------------------|
| | 30° | 25° | 30° | 35° | 40° | |
| Max | 0.06 | 0.08 | 0.10 | 0.12 | 0.13 | Asphericity |
| Temp | -0.14 | -0.18 | -0.26 | -0.34 | -0.34 | Axial/Sag. Curva |
| Inf | -0.00 | -0.10 | -0.15 | -0.27 | -0.42 | Asphericity |
| Sup | 0.14 | -0.03 | -0.19 | -0.37 | -0.53 | Axial/Sag. Curva |
| Mean | -0.04 | -0.10 | -0.18 | -0.27 | -0.35 | Asphericity |

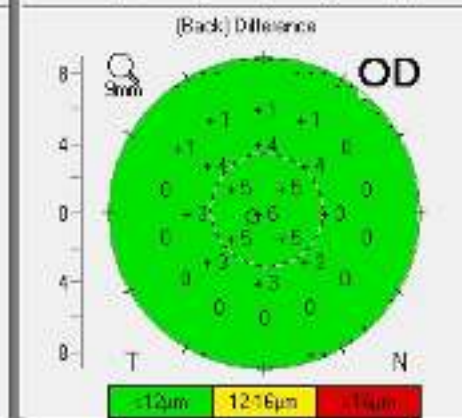
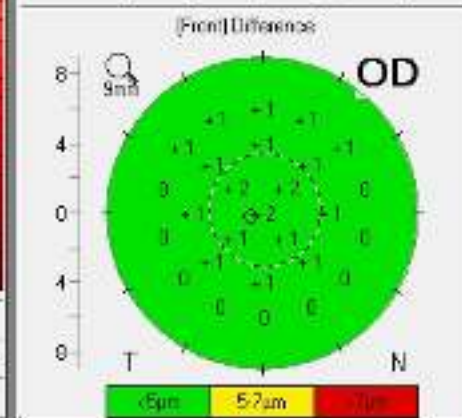
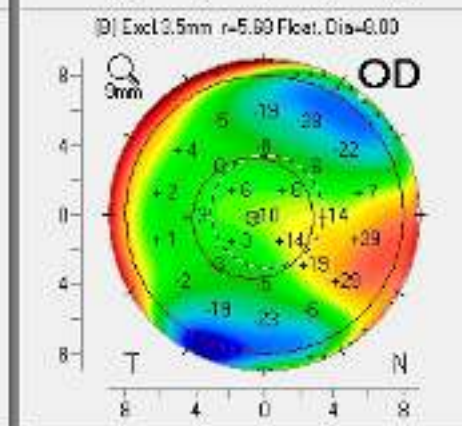
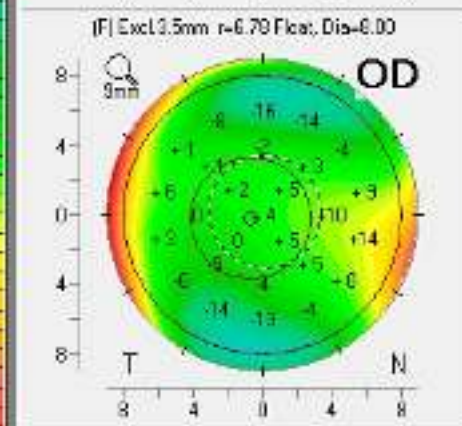
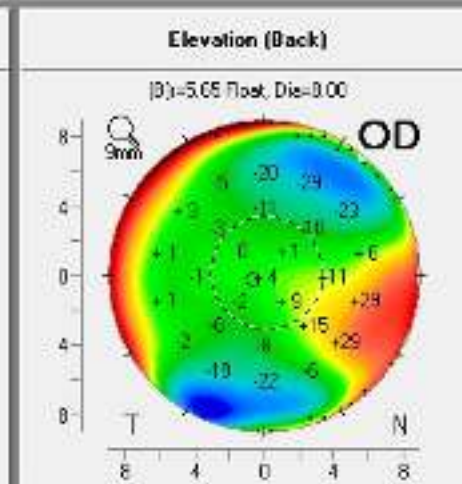
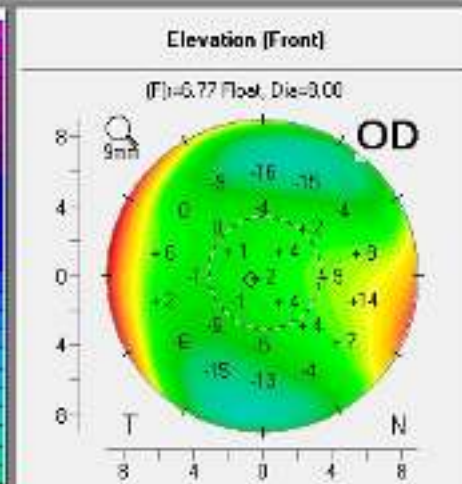
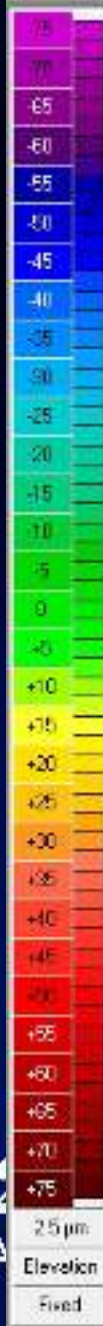
Indices (in 8mm zone)

| | | | |
|-------|--------|-------|---------|
| ISV: | 30 | IHA: | 13.7 |
| MA: | 0.14 | HD: | 0.021 |
| KI: | 1.02 | RMin: | 6.51 |
| CKI: | 1.00 | TKC: | Abnorm. |
| KISA: | 11.560 | IS: | 0.59 |



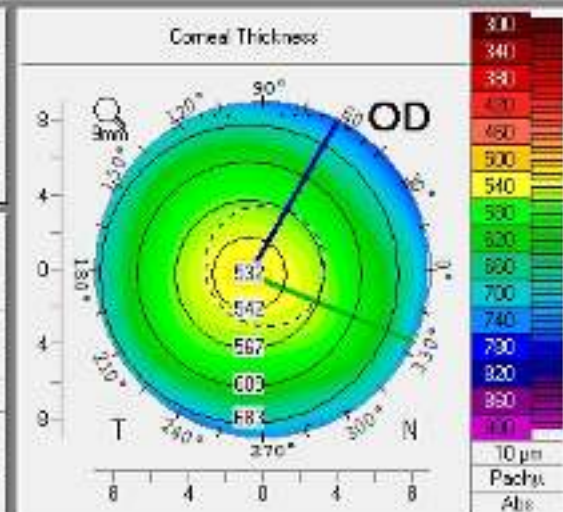
OCULUS - PENTACAM Belin/Ambrósio Enhanced Ectasia Display

1.2209

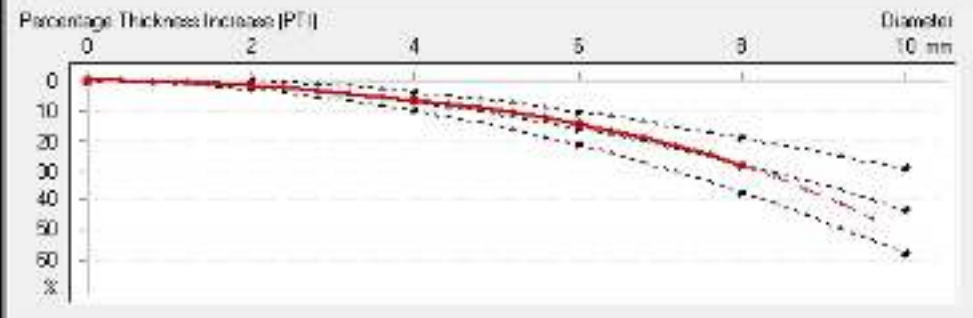
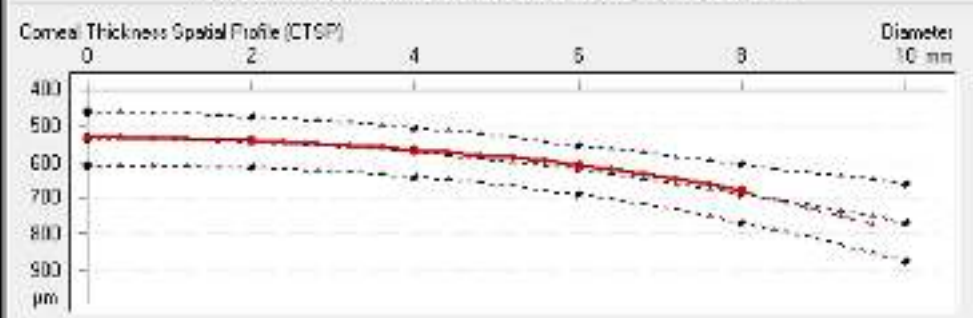


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 First Name: [Redacted]
 ID: [Redacted]
 Date of Birth: 05/16/2004 Eye: Right
 Exam Date: 07/06/2021 Time: 10:14:37
 Exam Info:

| | | | |
|-----------------------|-----------|-----------|-------------|
| K1: | 43.40 | Avg: | 165.9° |
| K2: | 51.00 | Q-val: | -3.16 |
| KMax: | 51.80 | QS: | DI |
| Pachy Thin Local: | | O: | 532 μ m |
| Dist. Apex Thin Loc.: | | IT: | 0.37mm |
| F.Ele.Th: | 1 μ m | B.Ele.Th: | 3 μ m |
| Progression Index: | | | |
| Min: | 0.64 | Max: | 1.12 |
| Avg: | 0.92 | AP Max: | 474 |



Mean corneal thickness values on rings concentrically to the thinnest location



Reference Database: Myopic/Normal Hyperopic/Mixed Cyl Literature

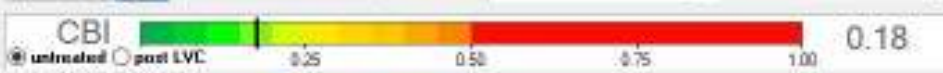
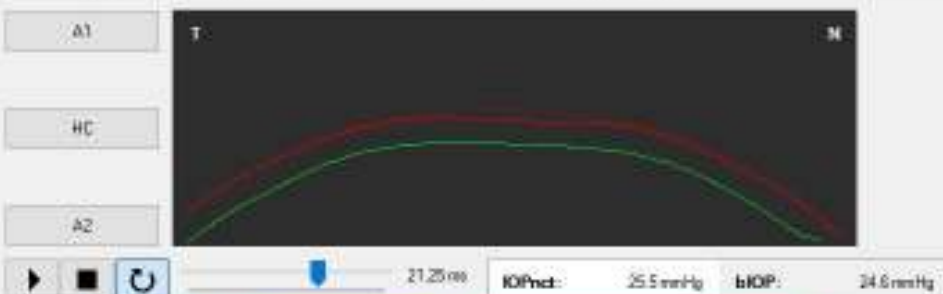
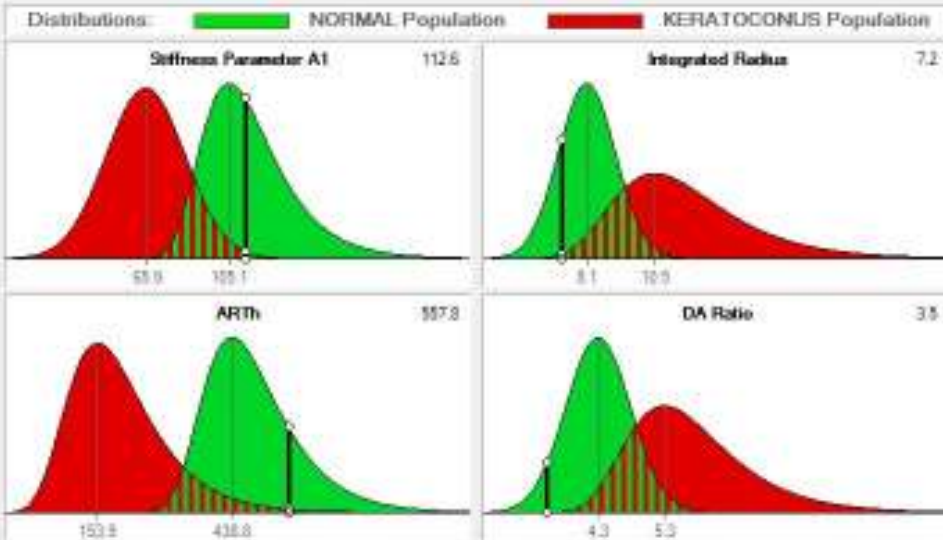
DI: -0.74 DIx: -0.05 DIy: 0.08 DIz: 0.16 DIr: 0.13 DI: 1.06

OCULUS Corvis® ST - Biomechanical/Tomographic Assessment (ARV)

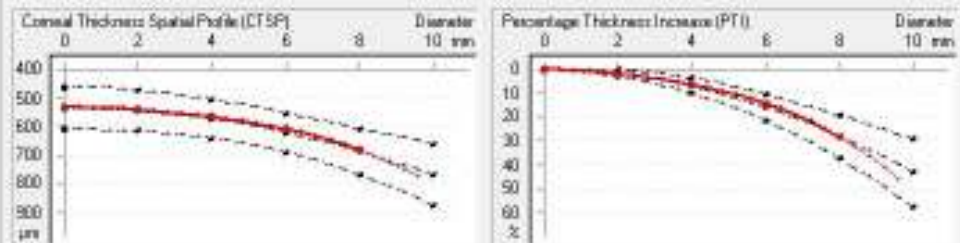
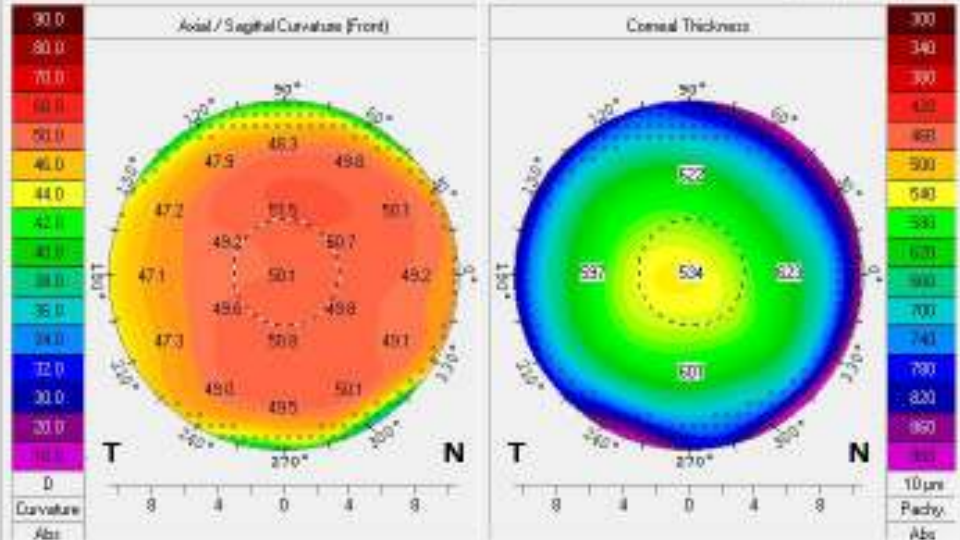
162021

Name: [REDACTED] ID: [REDACTED] Date of birth: 16.05.2004 Age: 17
 Exam. Date: [REDACTED] Time: 10:28:45 Eye: Right (OD) Exam. Date: 06.07.2021 Time: 10:14:37 Eye: Right (OD)
 Info: [REDACTED] OS: OK Info: OS: OK

Corvis ST - Biomechanical Assessment



Pentacam - Tomographic Assessment



K Max: 518.0 IS Value: -0.60 PRFI: 0.01 TNC: Abnorm
 BAD D █ █ █ █ 1.06
 myopic hyperopic

EOS 2
EGYPTIAN

Oculus Optikgeräte GmbH
Münchholzhäuser Str. 29

35582 Wetzlar

Tel: (0641) 20 05-0
Fax: (0641) 20 05-255

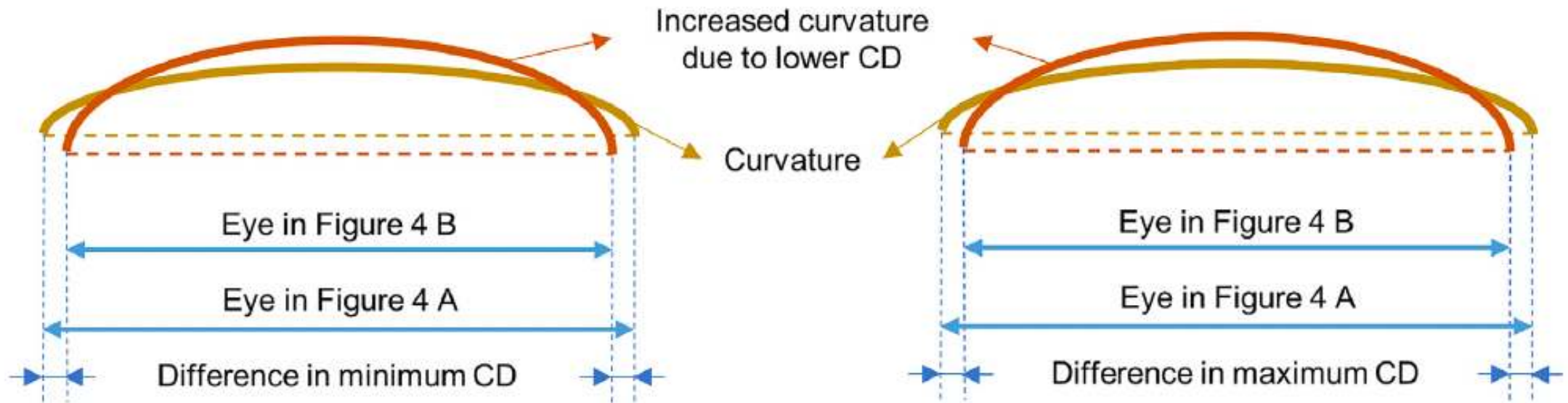
www.oculus.de



Minimum Corneal Diameter and Anterior Steep Axis Curvature Share the Same Meridian: A Novel Finding



MATHEW FRANCIS, HIMANSHU MATAIA, ANSU ANN JOHN, JYOTI MATAIA, NANDINI CHINNAPPAIAH, PRARTHANA BHANDARY, ROHIT SHETTY, RUDY M.M.A. NUIITS, AND ABHIJIT SINHA ROY



Hypothesis: When corneal diameter decreases, elevation and curvature increases.

FIGURE 5. Schematic diagram showing how lower cornea diameter (CD) was causing warping of the cornea, especially along the minimum corneal diameter (minCD) meridian resulting in higher elevation and curvature along the same meridian.

Thin Cornea

EOS 2025


EGYPTIAN OPHTHALMOLOGICAL SOCIETY

OCULUS - PENTACAM 4 Maps Refractive

1.30/04


Last Name: XXXXXXXXXX
 First Name: XXXXXXXXXX
 ID: XXXXXXXXXX
 Date of Birth: 02/01/1987 Eye: Left
 Exam Date: 01/27/2025 Time: 10:48:35
 Exam Info: XXXXXXXXXX

Cornea Front



| | | | |
|--------------|---------|--------------|---------|
| Rf: | 0.19 mm | K1: | 41.2 D |
| Rs: | 7.72 mm | K2: | 43.7 D |
| Rm: | 7.56 mm | Kmc: | 42.4 D |
| Axis (ell): | 6.6° | Axis (ell): | 2.5 D |
| Q-val: (8mm) | -0.47 | Rper: | 8.24 mm |
| | | Rmir: | 7.70 mm |

Cornea Back

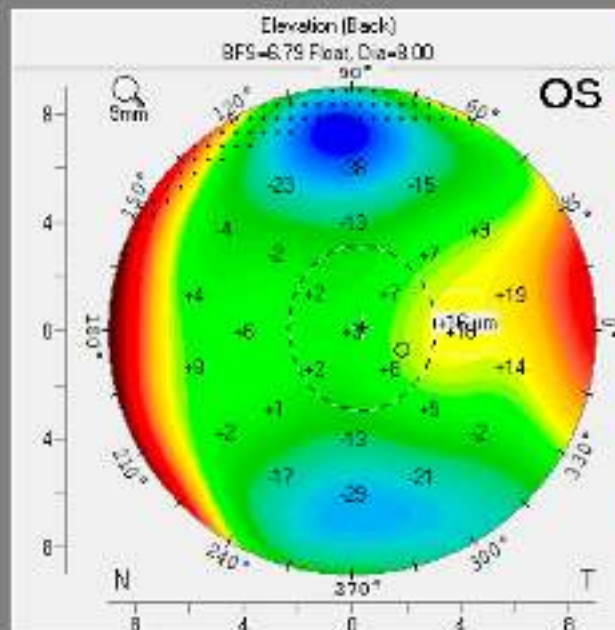
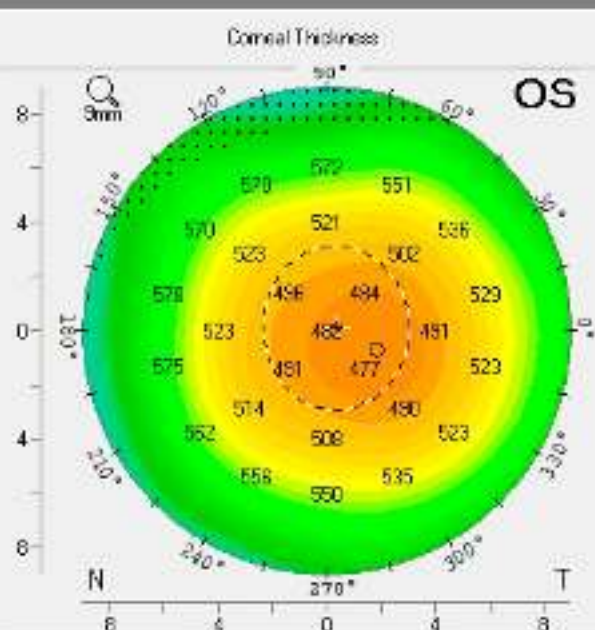
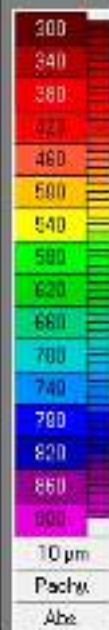
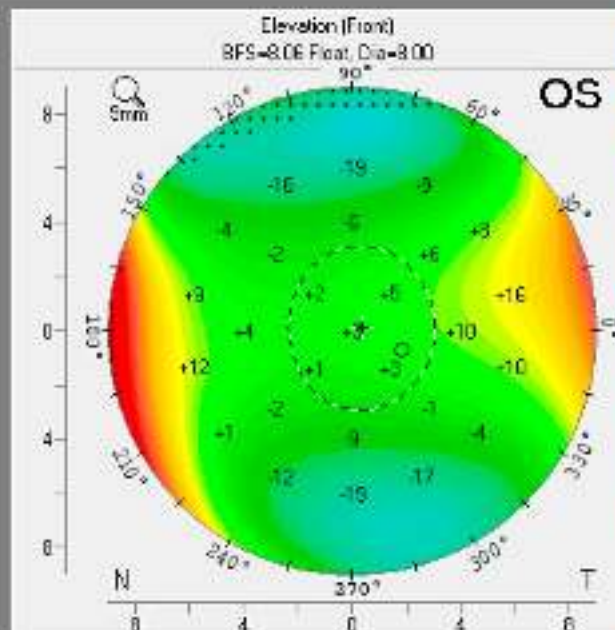
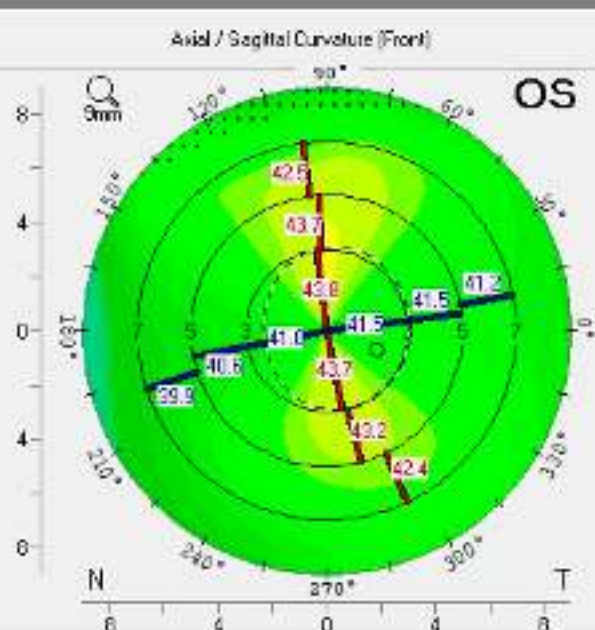
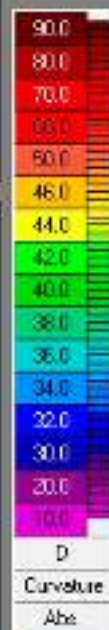


| | | | |
|--------------|---------|--------------|---------|
| Rf: | 6.56 mm | K1: | -5.7 D |
| Rs: | 6.44 mm | K2: | -6.2 D |
| Rm: | 6.70 mm | Kmc: | -6.0 D |
| Axis (ell): | 1.8° | Axis (ell): | 0.5 D |
| Q-val: (8mm) | -0.45 | Rper: | 7.03 mm |
| | | Rmir: | 6.35 mm |

| | | | | | |
|------------------|----------|-------|-------|-------|-------|
| Pupil Center: | + 480 μm | x(mm) | +0.18 | y(mm) | +0.05 |
| Pachy Vertex N.: | 482 μm | x(mm) | 0.00 | y(mm) | 0.00 |
| Thinnest Local.: | 476 μm | x(mm) | -0.90 | y(mm) | -0.35 |
| K Max (Front): | 43.8 D | x(mm) | -0.07 | y(mm) | +1.11 |

| | | | |
|----------------------|----------------------|------------|---------|
| Cornea Volume: | 52.2 mm ³ | HW/TW: | 11.9 mm |
| Chamber Volume: | 101 mm ³ | Angle: | 41.3° |
| A. C. Depth (Int.): | 3.07 mm | Pupil Dia: | 2.95 mm |
| Enter IDP / ICPTSum: | | Lens Th.: | |

Refractive



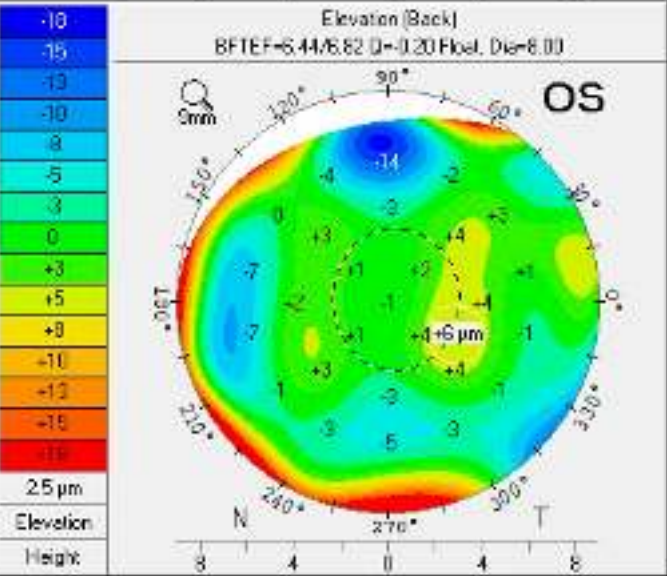
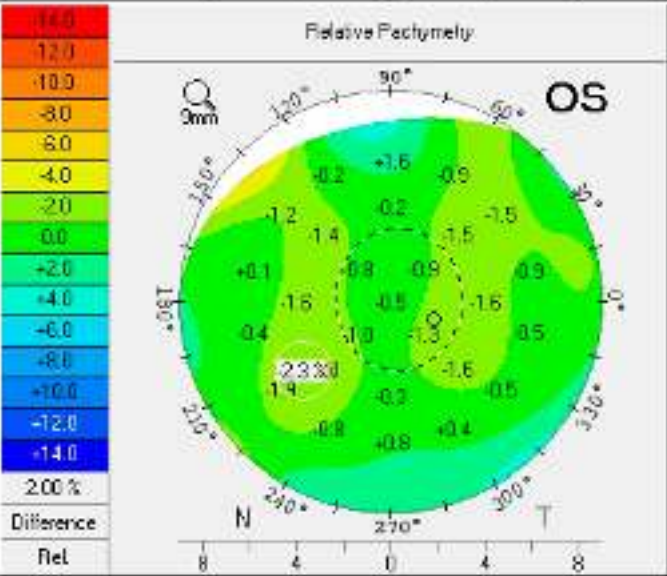
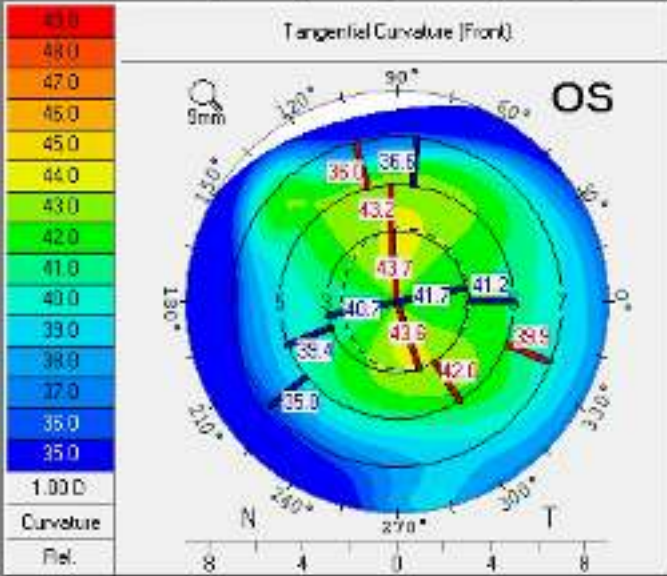
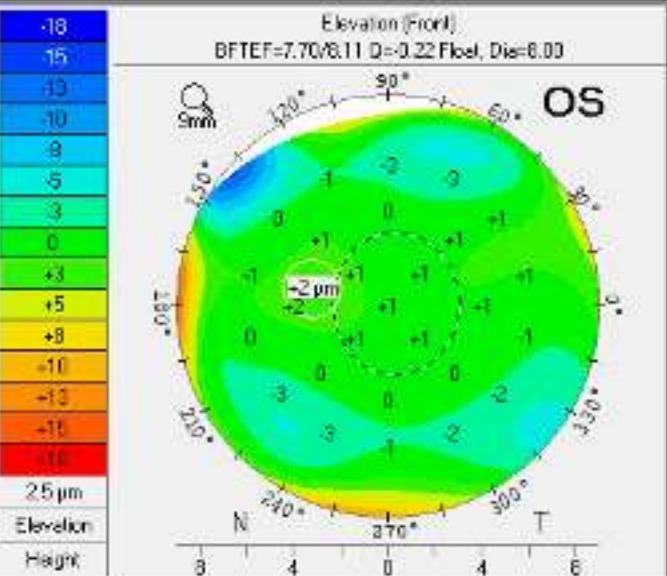
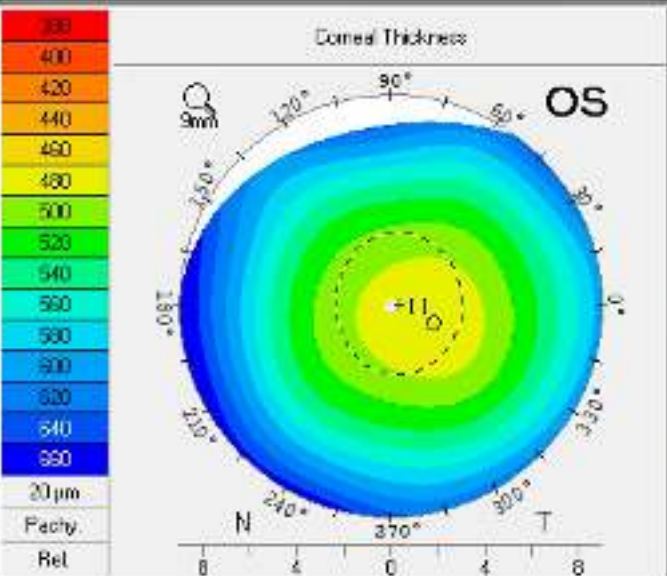
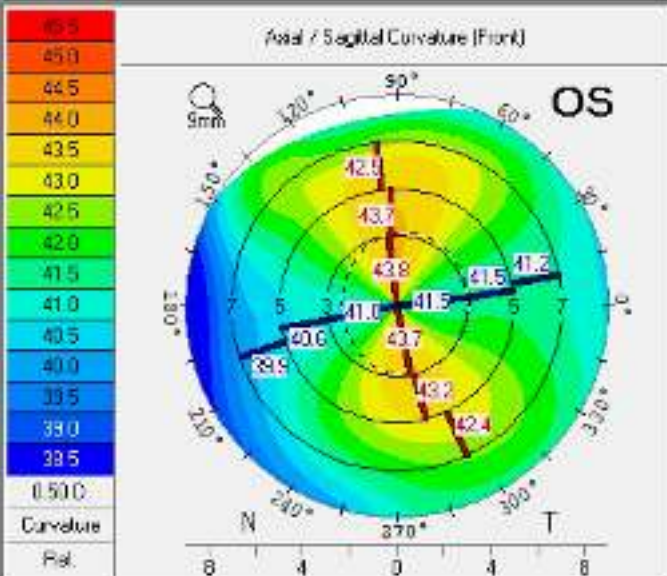
OCULUS - PENTACAM Holladay Report

1.30:04

Last Name: XXXXXXXXXX
 First Name: XXXXXXXXXX
 ID: Thin Cores Good Dio
 Date of Birth: 02/01/1997 Eye: Left
 Exam Date: 01/27/2025 Time: 10:48:35

| Equiv K-Readings 65 (4.5mm Zone) | | | | Details |
|----------------------------------|---------------|---------------------|---------------|---------|
| EKR65 Flat K1 | 41.73 D (8.7) | D (5.0mm) | -0.33 | |
| EKR65 Steep K2 | 44.03 D (8.6) | Total SA: Z(+G+0.0) | +0.100 μ | |
| EKR65 Mean | 42.98 D | Radial Ratio (B/F) | 94.5 % | |
| Astig EKR65 | 2.30 D | RMS HOA w/E (6mm) | 0.358 μ m | |

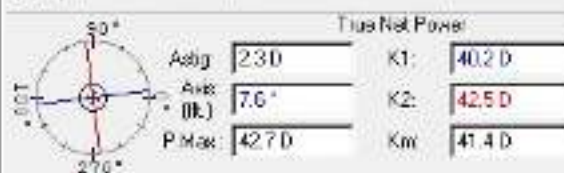
| | | | |
|-------------------|---------------|-------------|-----------------------|
| Pupil Dia | + 2.05 mm | x 0.10 mm T | y: 0.05 mm S (rel.VN) |
| HWTW: | () 11.9 mm | x 0.58 mm T | y: 0.01 mm S (rel.VN) |
| Pachy Min: | ○ 475 μ m | x 0.50 mm T | y: 0.35 mm I (rel.VN) |
| Est. Pta-Flat. K1 | 41.4 D | Rel. Charge | -1.0 D |
| ADD (Est.) | 3.55 mm | Chord μ | 0.19 m OS OK |



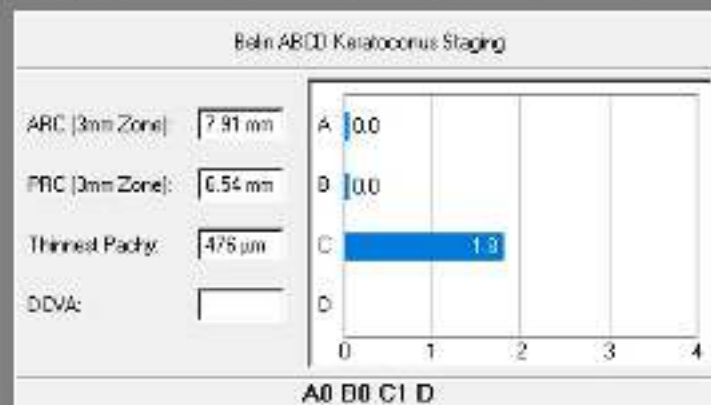
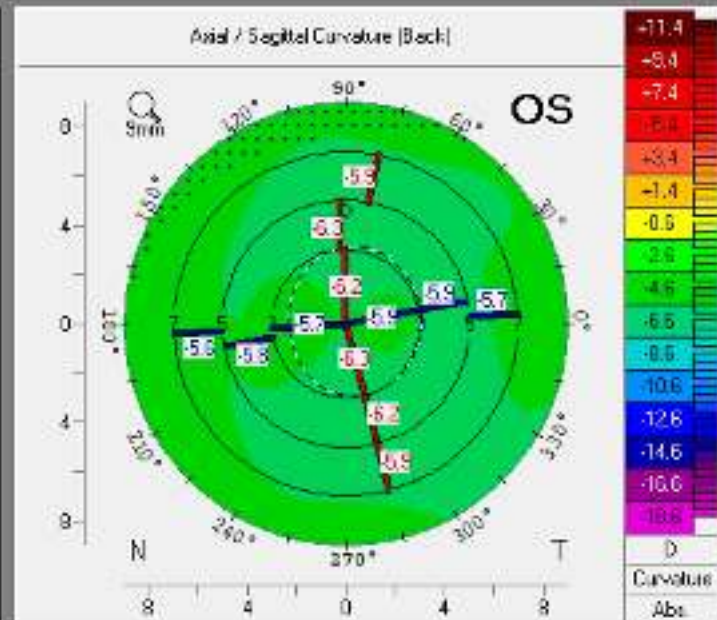
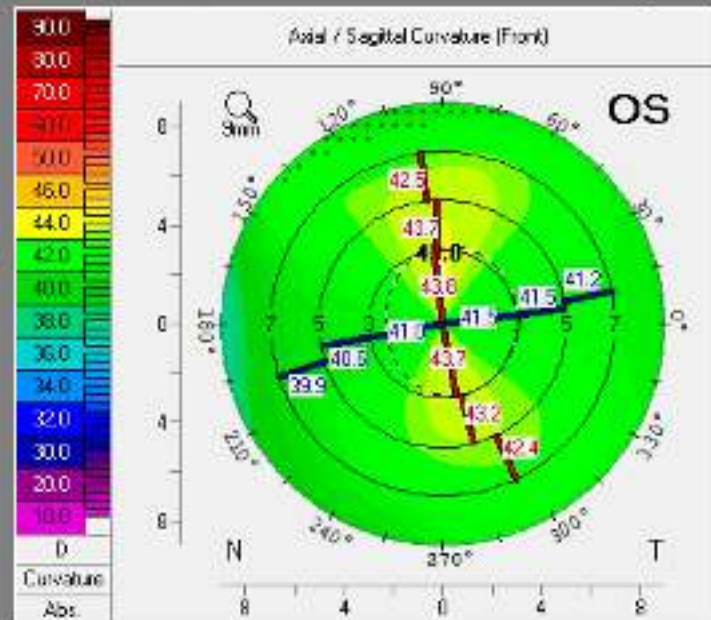
OCULUS - PENTACAM Topometric/KC-Staging

1.30.04

Last Name: XXXXXXXXXX
 First Name: XXXXXXXXXX
 ID: Thin Cornea Good Bio
 Date of Birth: 02/01/1987 Eye: Left
 Exam Date: 01/27/2025 Time: 10:46:35
 Exam Info:



| | | | | | |
|---------------------|----------------------|------------|---------|--------|-------|
| Pupil Center: | + 400 μm | + [mm] | +0.10 | + [mm] | +0.05 |
| Pachy/Vortex N: | - 482 μm | - [mm] | 0.00 | - [mm] | 0.00 |
| Thinnest Local: | ○ 476 μm | ○ [mm] | +0.90 | ○ [mm] | -0.35 |
| K Max (Front): | 43.8 D | ○ [mm] | -0.07 | ○ [mm] | +1.11 |
| Cornea Volume: | 52.2 mm ³ | Hv/1W: | 11.9 mm | | |
| Chamber Volume: | 101 mm ³ | Angle: | 41.3° | | |
| A. C. Depth (Int.): | 3.07 mm | Pupil Dia: | 2.85 mm | | |
| IOP(Sum): | | Lens Th: | | | |

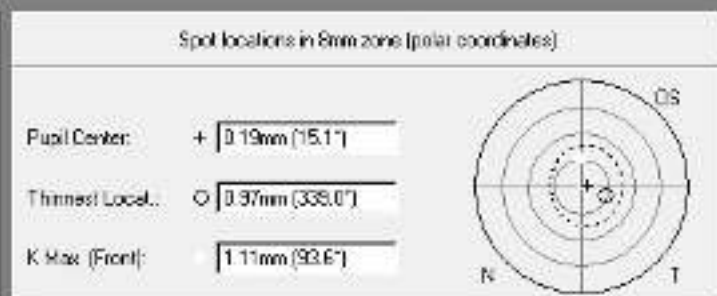
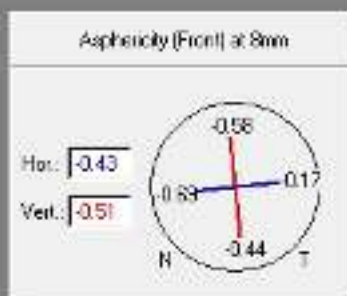


Asphericity (Front) of Major Meridians

| ID-val. | Peripheral mm-Rings (Dia) | | | | | Front |
|---------|---------------------------|-------|-------|-------|-------|------------------|
| | 5mm | 7mm | 8mm | 9mm | 10mm | |
| Nax | 0.44 | -0.55 | -0.69 | -0.81 | -0.79 | Asphericity |
| Temp | -0.09 | -0.13 | -0.17 | -0.23 | -0.30 | Asial/Sag. Curva |
| Int | -0.45 | -0.45 | -0.44 | -0.42 | -0.40 | Back |
| Sup | -0.34 | -0.45 | -0.50 | -0.66 | -0.71 | Asphericity |
| Mean | -0.33 | -0.40 | -0.47 | -0.53 | -0.57 | Asial/Sag. Curva |

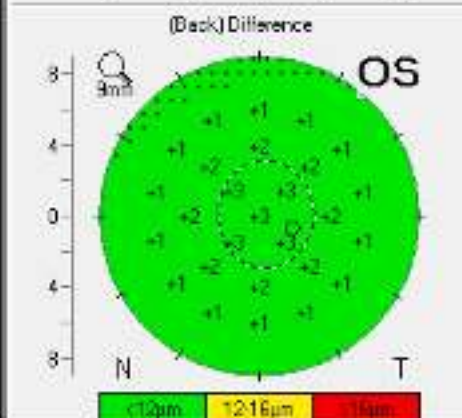
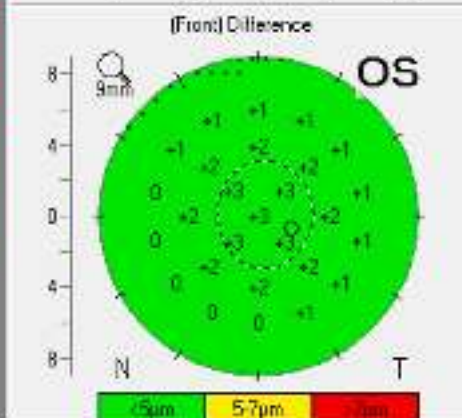
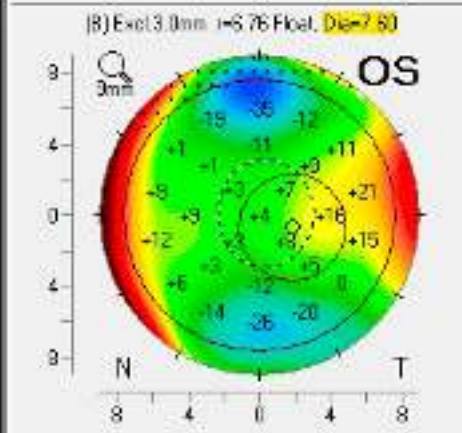
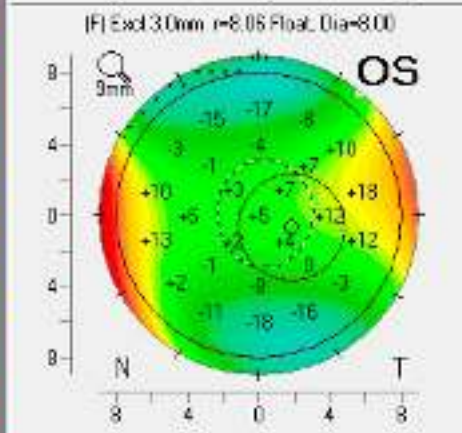
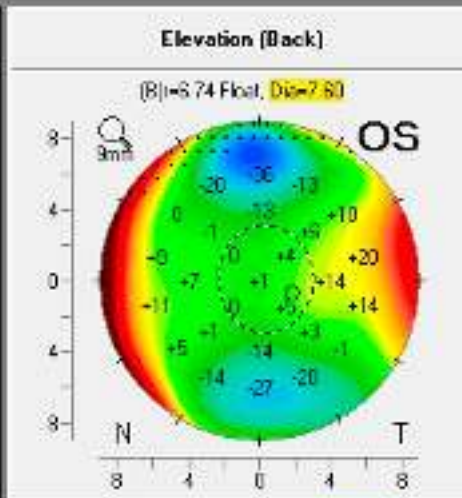
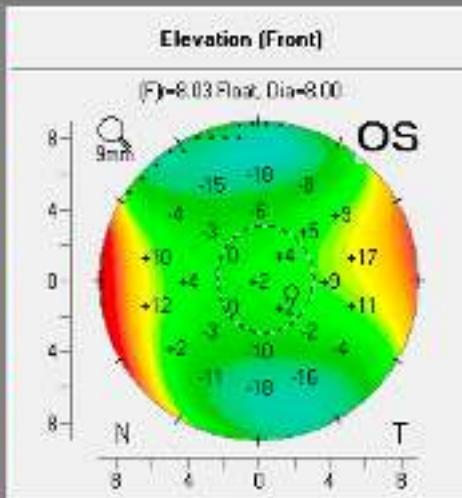
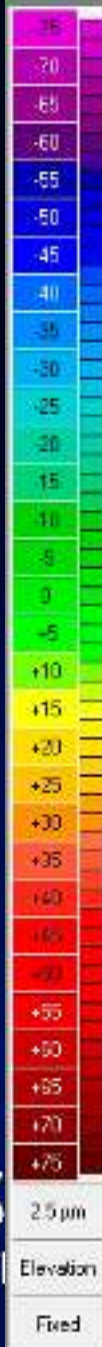
Indices (in 8mm zone)

| | | | |
|-------|-------|-------|-------|
| ISV: | 24 | IHA: | 4.1 |
| MA: | 0.14 | HD: | 0.012 |
| KI: | 1.00 | RMin: | 7.70 |
| CKI: | 1.00 | TKC: | |
| KISA: | 3.657 | IS: | 0.54 |



OCULUS - PENTACAM Belin/Ambrósio Enhanced Ectasia Display

1.30:04



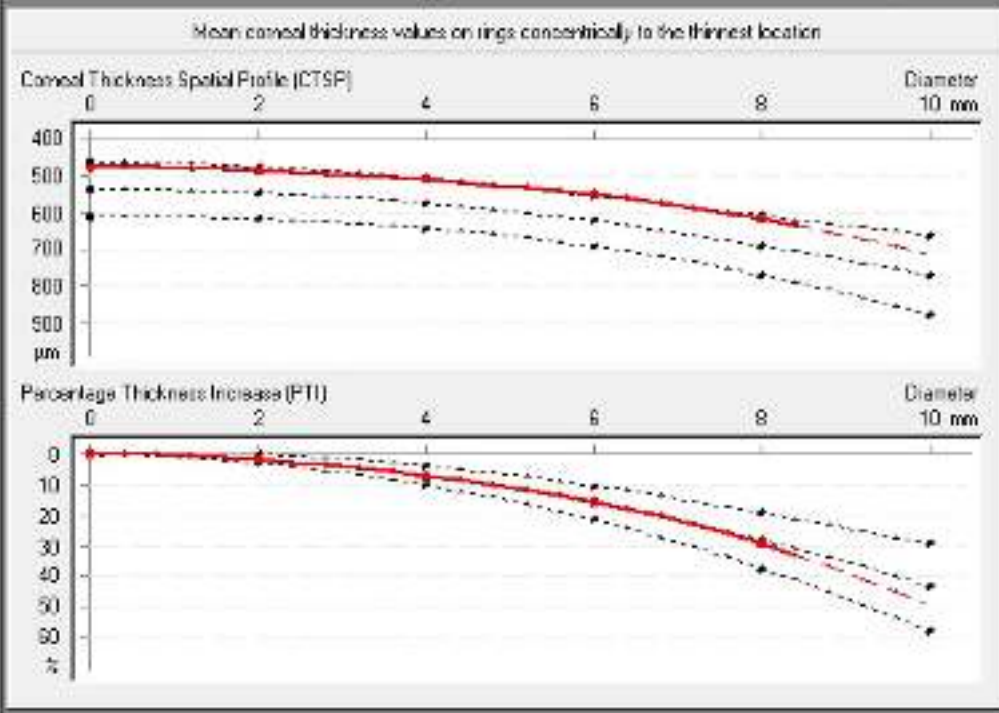
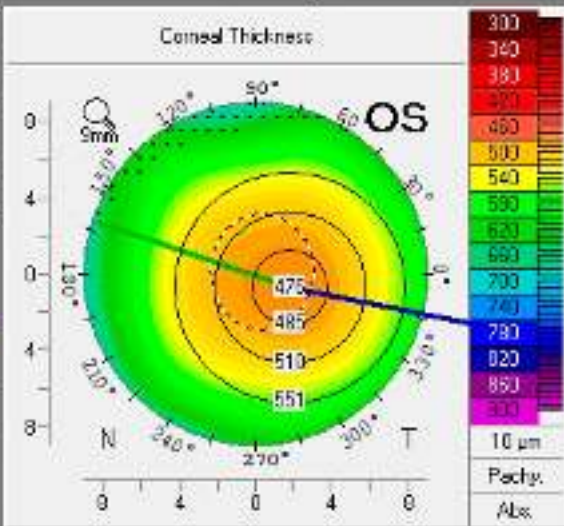
Last Name: [REDACTED]
 First Name: [REDACTED]
 ID: [REDACTED]
 Date of Birth: 02/01/1997 Eye: Left
 Exam Date: 01/27/2025 Time: 10:48:25
 Exam Info: [REDACTED]

| | | | |
|-------|-------|--------|-------|
| K1: | 41.20 | Ax: | 5.6° |
| K2: | 43.70 | U-val: | -0.47 |
| KMax: | 43.80 | OS: | OK |

Pachy Thin Locat.: 476 μm
 Dist. Vertex N-Thin Loc.: IT 0.97mm

F Ele. Th: 4 μm B Ele. Th: 8 μm

Progression Index
 Min: 0.70 Max: 1.31
 Avg: 1.01 APTmax: 364



Reference Database: Myopic/Normal Hyperopic/Mixed Cyl

Dt: 0.17 Db: -0.68 Dp: 0.68 Ds: 2.01 Da: 1.13 D: 1.39

OCULUS Corvis® ST - Biomechanical/Tomographic Assessment (ARV)

1.72704

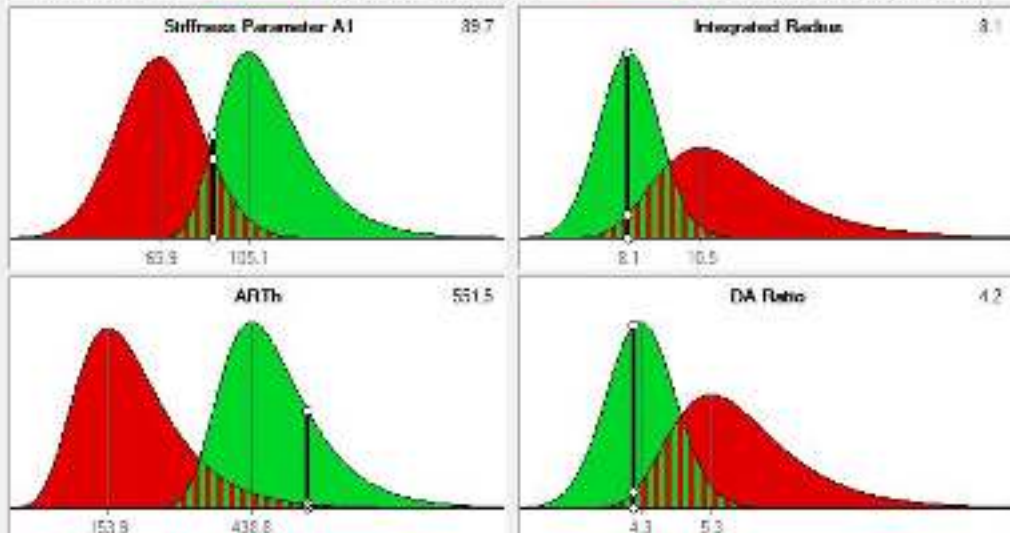
Patient Examination Display Export Settings External software

E-Mail AVI JPG

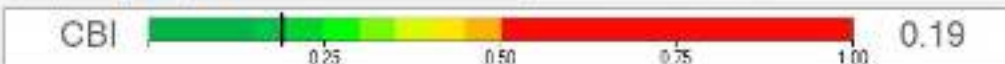
| | | | | | | | |
|-------------|------------|-------|------------|----------------|------------|-------------|------------|
| Name: | [REDACTED] | ID: | [REDACTED] | Date of birth: | 01.02.1997 | Age: | 37 |
| Exam. Date: | [REDACTED] | Time: | 10:52:02 | Eye: | Left (OS) | Exam. Date: | 27.01.2025 |
| Info: | [REDACTED] | OS: | OK | Time: | 10:48:35 | Eye: | Left (OS) |
| | | Info: | OS: | OK | | | |

Corvis ST - Biomechanical Assessment

Distributions: █ NORMAL Population █ KERATOCONUS Population



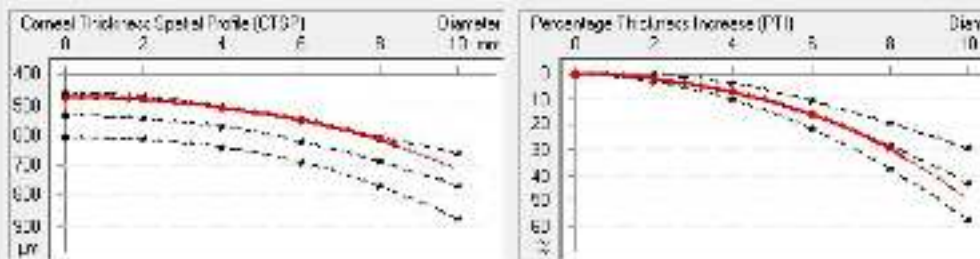
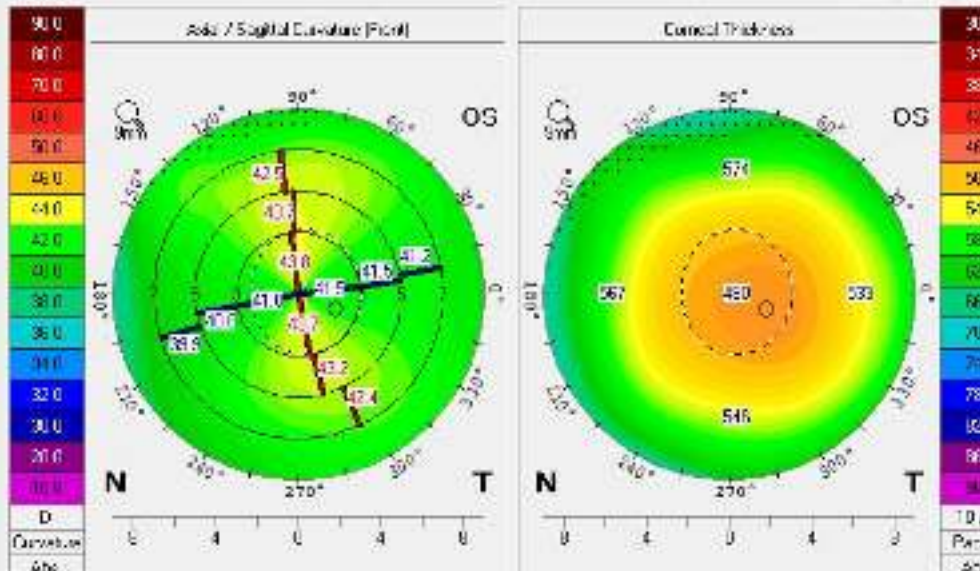
3.00 mm IOPfact: 16.0 mmHg bIOP: 17.2 mmHg



Reference: Ethnicity Global database Treatment Units

TBI 0.24
35582 Wetzlar

Pentacam - Tomographic Assessment



K Max.: 43.0 D IS Value: -0.50 PRFI: 0.20 TMC:



EOS

EGYPTIA

Oculus Optikgeräte GmbH
Münchholzhäuser Str. 29

35582 Wetzlar

Tel: (0641) 20 05-0
Fax: (0641) 20 05-255

www.oculus.de



Follow Up of KC

EOS 2025

EGYPTIAN OPHTHALMOLOGICAL SOCIETY

Without treatment

EOS 2025

EGYPTIAN OPHTHALMOLOGICAL SOCIETY

Last Name: []
 First Name: []
 ID: []
 Date of Birth: []
 Exam Date: []
 Exam Info: []

Name: [] ID: [] Date of birth: 05.05.2003 Age: 19
 Exam. Date: [] Time: 13:17:30 Eye: Right (OD) Exam. Date: 16.05.2022 Time: 13:14:49 Eye: Right (OD)
 Info: [] OS: OK Info: [] OS: OK

Corvis ST - Biomechanical Assessment

Distributions: █ NORMAL Population █ KERATOCONUS Population

| | |
|------------------------|-------|
| Stiffness Parameter A1 | 105.1 |
| Integrated Radius | 8.2 |
| ARTh | 332.8 |
| DA Ratio | 4.1 |

OD

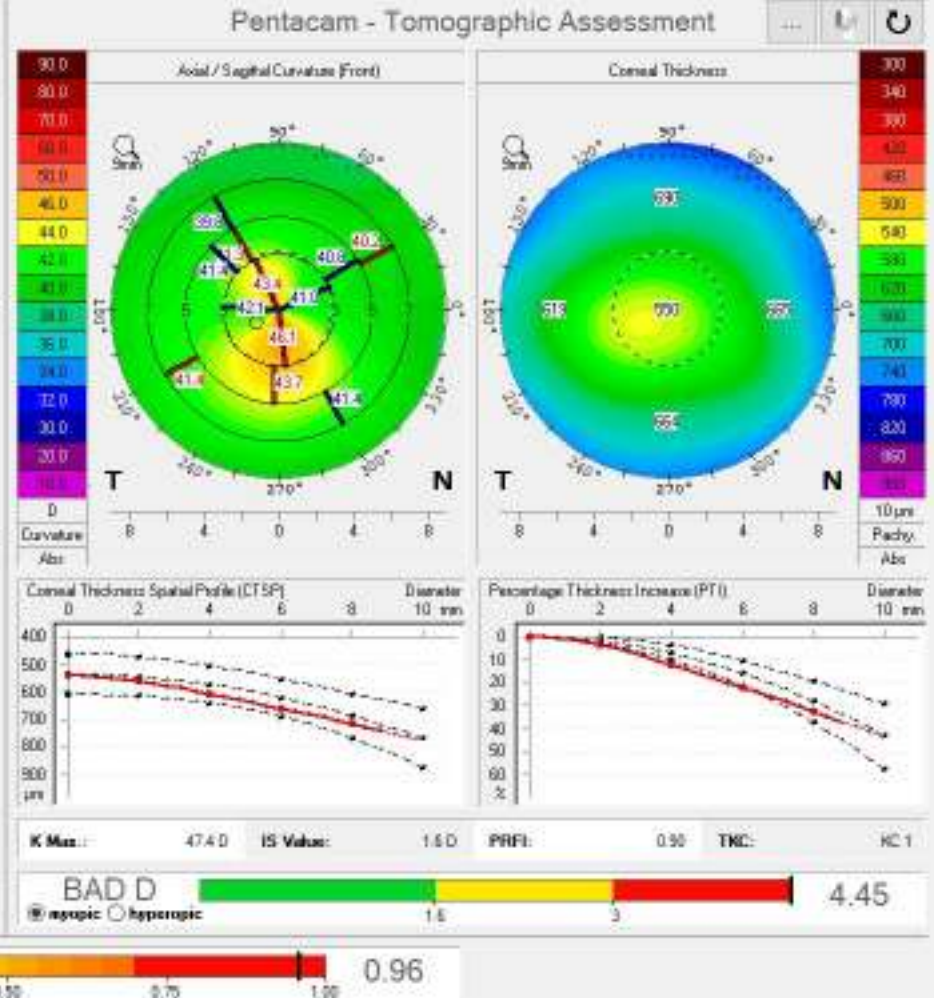
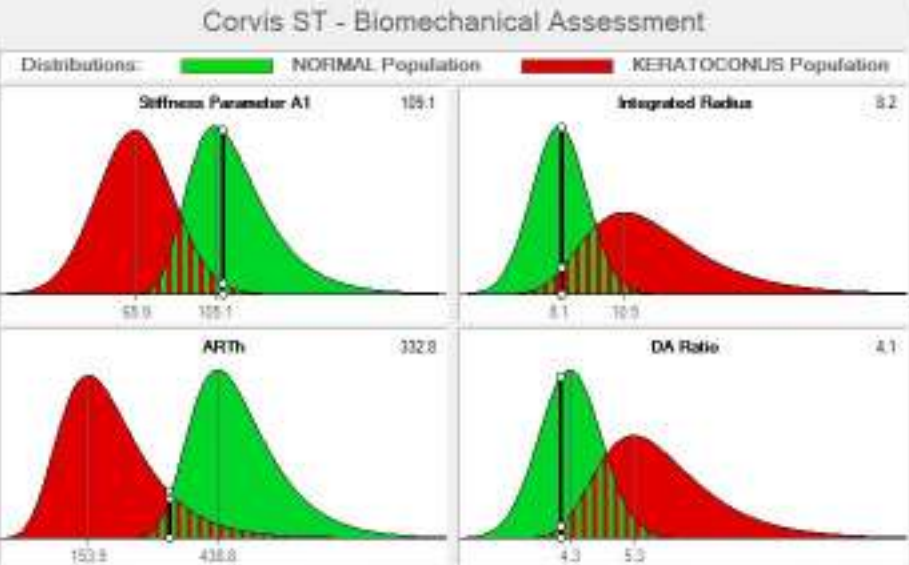
HC

A2

18.25 mm IOP_{fact}: 15.5 mmHg BIOP: 15.0 mmHg

CBI 0.51
 untreated post LVC

TBI 0.96



OCULUS Corvis® ST - Homburg Biomechanical E-Staging (BEST)

162503

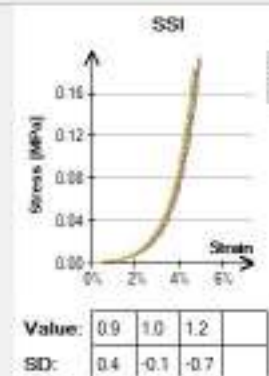
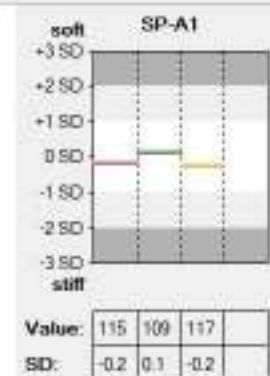
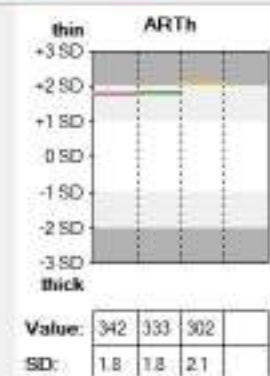
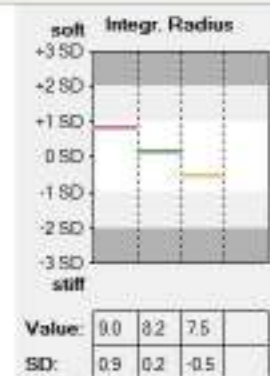
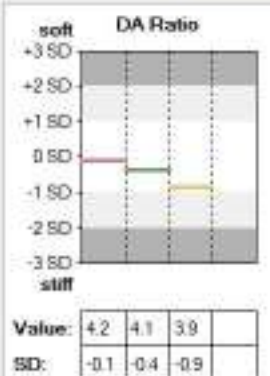
Name: [Redacted] ID: [Redacted] Date of birth: 05.05.2003 Age: 19 Eye: Right (OD)

Select 4
Right Eye

Select 4
Left Eye

Exam: Right (OD) OS

- 10.01.2022 OK
- 12.06.22 OK
- 16.05.2022 OK
- 13.17.30 OK
- 06.02.2022 OK
- 14.28.25



Baseline

Changes from baseline exam:

| | | |
|-------------|------|------|
| Diff. time: | 0.3y | 1.1y |
| Diff. SD: | -0.3 | -0.7 |
| Stiffer: | | |
| not sign.: | ✓ | ✓ |
| softer: | | |

Baseline

Changes from baseline exam:

| | | |
|-------------|------|------|
| Diff. time: | 0.3y | 1.1y |
| Diff. SD: | -0.7 | -1.4 |
| Stiffer: | | ✓ |
| not sign.: | ✓ | ✓ |
| softer: | | |

Baseline

Changes from baseline exam:

| | | |
|-------------|------|------|
| Diff. time: | 0.3y | 1.1y |
| Diff. SD: | 0.1 | 0.3 |
| Thicker: | | |
| not sign.: | ✓ | |
| thinner: | | ✓ |

Baseline

Changes from baseline exam:

| | | |
|-------------|------|------|
| Diff. time: | 0.3y | 1.1y |
| Diff. SD: | 0.3 | -0.1 |
| Stiffer: | | |
| not sign.: | ✓ | ✓ |
| softer: | | |

Baseline

Changes from baseline exam:

| | | |
|-------------|------|------|
| Diff. time: | 0.3y | 1.1y |
| Diff. SD: | -0.6 | -1.2 |
| Stiffer: | ✓ | ✓ |
| not sign.: | | |
| softer: | | |

Baseline

Changes from baseline exam:

| | | |
|--------------------|------|------|
| Diff. time: | 0.3y | 1.1y |
| Diff. Stage: | -0.1 | -0.2 |
| No Prog. Progress: | ✓ | ✓ |

Post CXL

EOS 2025

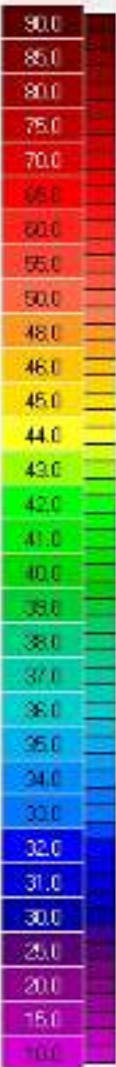
EGYPTIAN OPHTHALMOLOGICAL SOCIETY

OCULUS - PENTACAM Compare 4 Exams

1.29.11

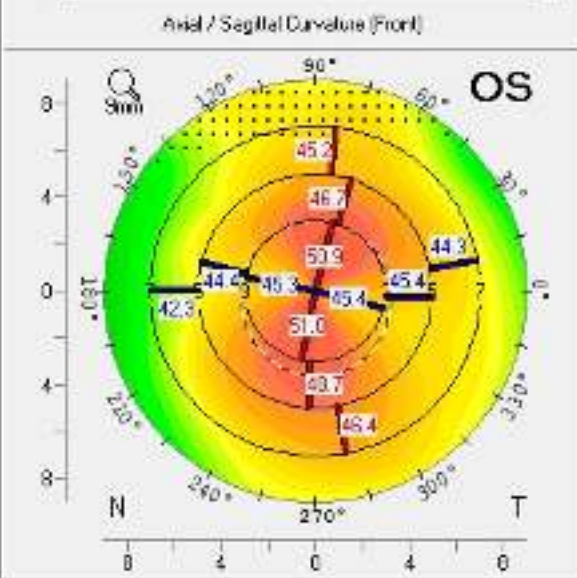
Name:

Exam

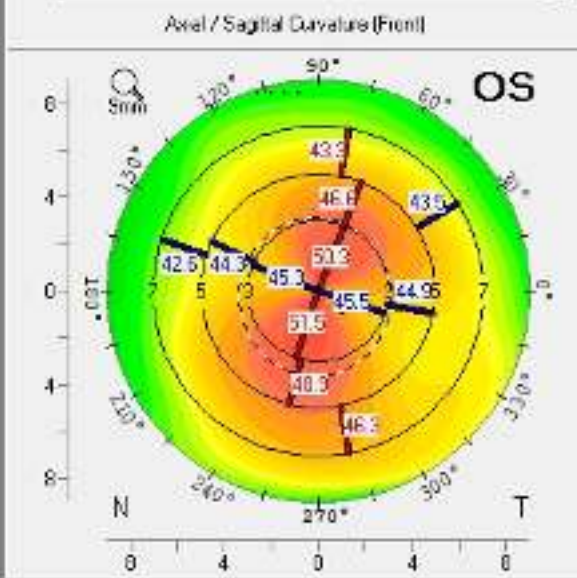


D
Curvature
Abs.

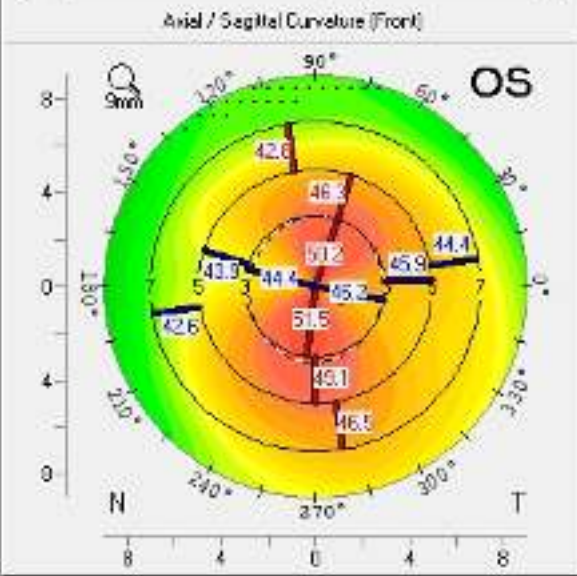
A: A: 01/15/2024 12:24:01 Left (25) 3D-Scan HR



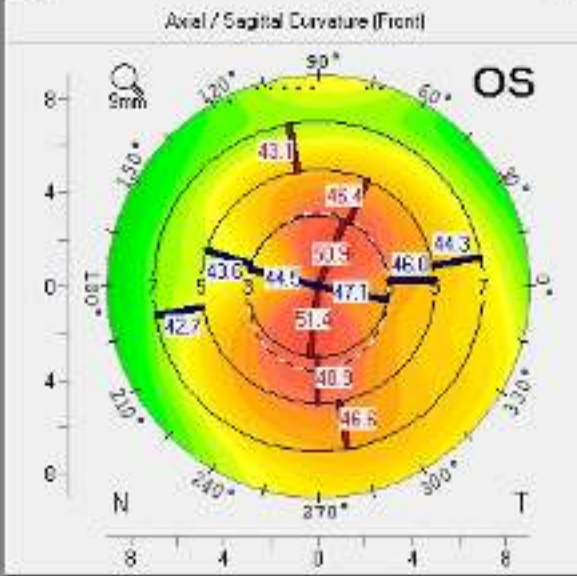
B: B: 12/04/2023 13:23:52 Left (25) 3D-Scan HR



C: C: 05/15/2023 12:49:50 Left (25) 3D-Scan HR

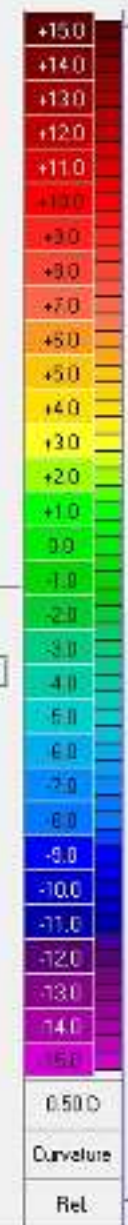


D: D: 03/20/2023 15:37:44 Left (25) 3D-Scan HR



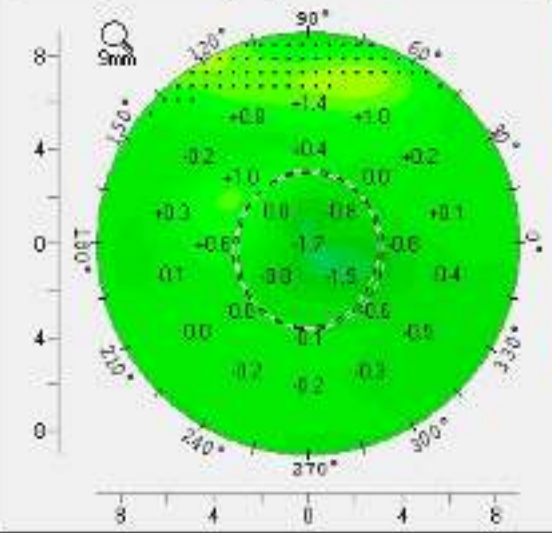
| Exam | Exam |
|------------------------------------|------------------------------------|
| <input checked="" type="radio"/> A | <input type="radio"/> A |
| <input type="radio"/> B | <input type="radio"/> B |
| <input type="radio"/> C | <input type="radio"/> C |
| <input type="radio"/> D | <input checked="" type="radio"/> D |

minus



Difference A - D

Axial / Sagittal Curvature (Front)

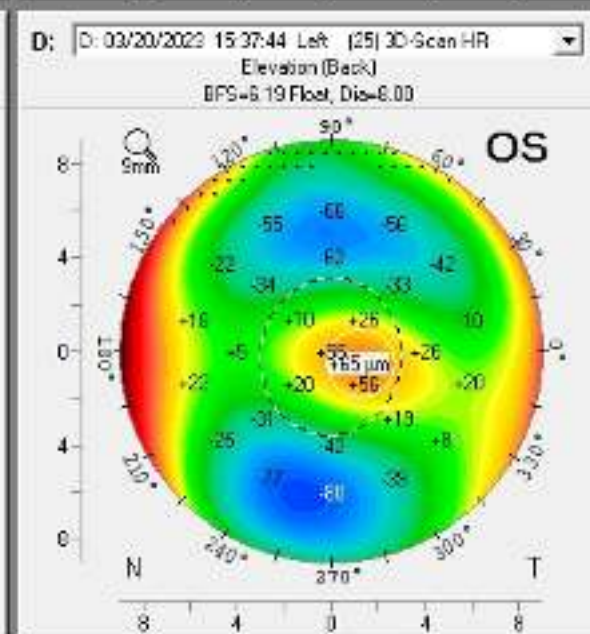
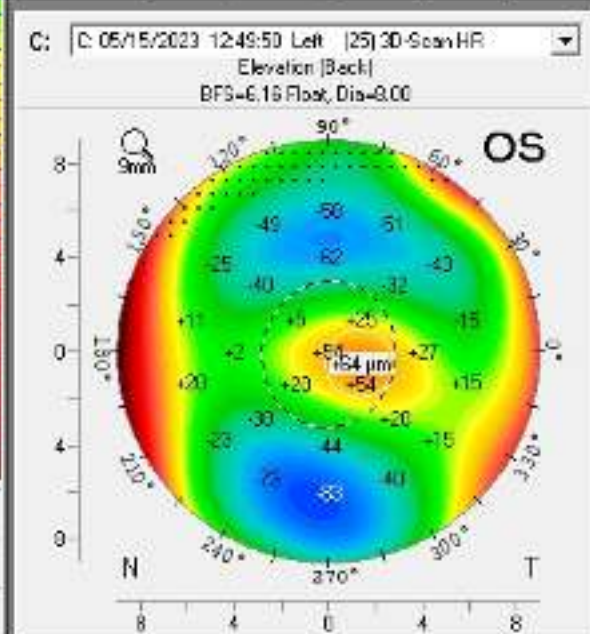
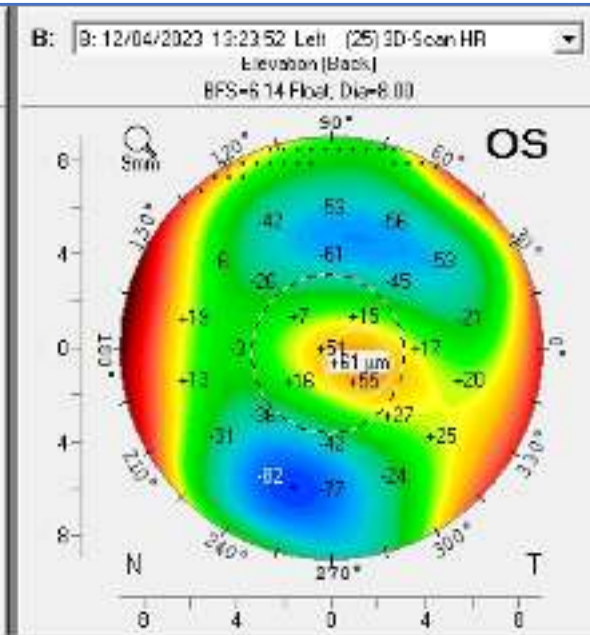
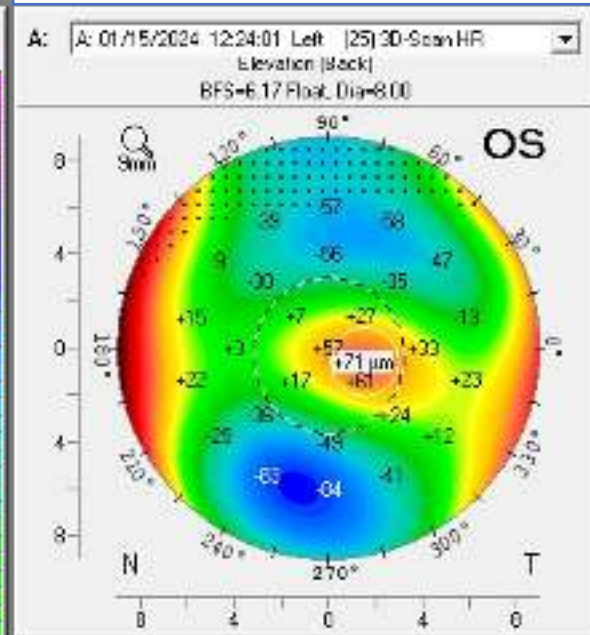


OCULUS - PENTACAM Compare 4 Exams

Name: _____

Exam

5.0 μ m
Elevation
Height



Exam

A

B

C

D

minus

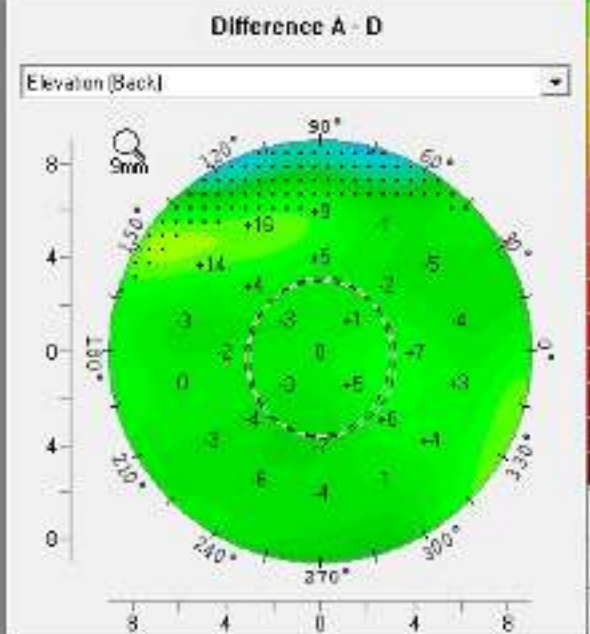
Exam

A

B

C

D

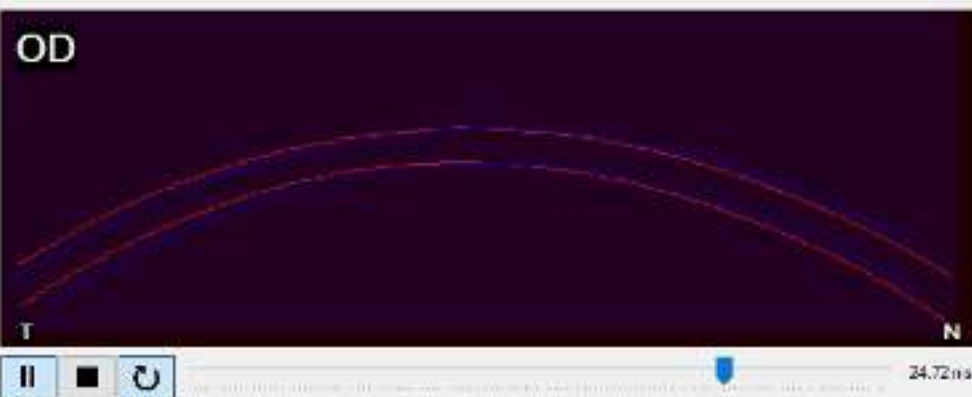


Name:

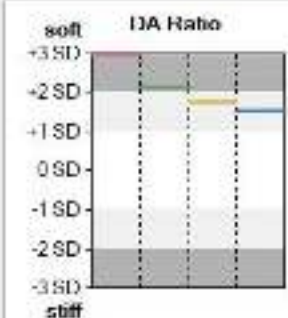
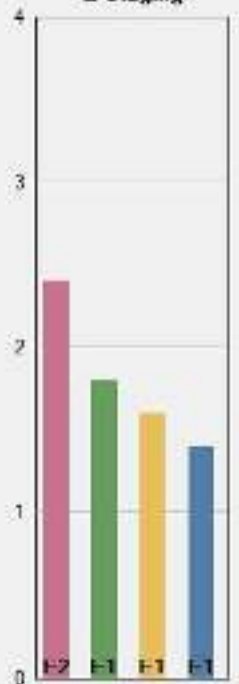
Select 4 exams:
Right Eye
Left Eye

Exam Right (OD OS)

- 20.03.2024 OK
- 15.03.2024 OK
- 15.05.2023 OK
- 12.01.2024 OK
- 04.12.2023 OK
- 13.08.2023 OK
- 15.01.2024 OK
- 14.05.2024 OK



E-Staging

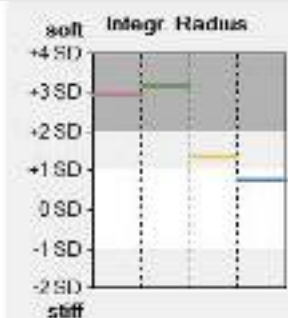


Value: 5.5 5.2 5.0 4.9
SD: 3.0 2.1 1.8 1.5

BaseLine @

Changes from baseline exam:

| Diff. line | 0.2y | 0.8y | 0.8y |
|------------|------|------|------|
| Diff. SD | -0.3 | -1.2 | -1.4 |
| Stiffer | | ✓ | ✓ |
| not sign. | ✓ | | |
| softer | | | |

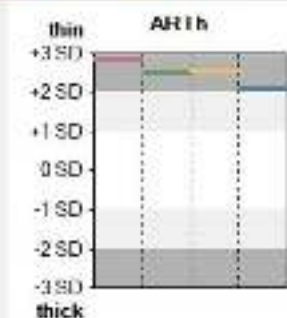


Value: 11.3 11.6 9.5 8.9
SD: 2.9 3.1 1.3 0.8

BaseLine @

Changes from baseline exam:

| Diff. line | 0.2y | 0.8y | 0.8y |
|------------|------|------|------|
| Diff. SD | 0.2 | -1.5 | -2.2 |
| Stiffer | | ✓ | ✓ |
| not sign. | ✓ | | |
| softer | | | |

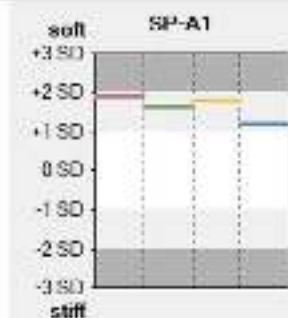


Value: 208 252 244 303
SD: 2.8 2.5 2.6 2.1

BaseLine @

Changes from baseline exam:

| Diff. line | 0.2y | 0.8y | 0.8y |
|------------|------|------|------|
| Diff. SD | -0.3 | -0.3 | -0.0 |
| Thicker | ✓ | ✓ | ✓ |
| not sign. | | | |
| thinner | | | |

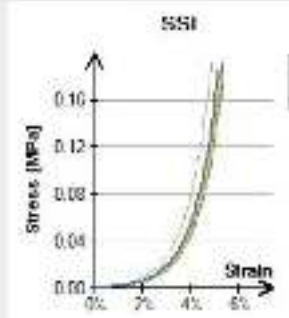


Value: .75 .81 .78 .90
SD: 1.9 1.7 1.8 1.2

BaseLine @

Changes from baseline exam:

| Diff. line | 0.2y | 0.8y | 0.8y |
|------------|------|------|------|
| Diff. SD | -0.3 | -0.1 | -0.7 |
| Stiffer | | | ✓ |
| not sign. | ✓ | ✓ | |
| softer | | | |



Value: 0.6 0.6 0.6 0.7
SD: 1.9 1.9 1.7 1.4

BaseLine @

Changes from baseline exam:

| Diff. line | 0.2y | 0.8y | 0.8y |
|------------|------|------|------|
| Diff. SD | 0.0 | -0.1 | -0.5 |
| Stiffer | | | ✓ |
| not sign. | ✓ | ✓ | |
| softer | | | |

CBIF: 5.1 5.4 5.6 5.7
E-Stage: 2.4 1.8 1.6 1.4

BaseLine @

Changes from baseline exam:

| Diff. line | 0.2y | 0.8y | 0.8y |
|-------------|------|------|------|
| Diff. Stage | 0.6 | 0.3 | 1.0 |
| No Prog | ✓ | ✓ | ✓ |
| Progress | | | |

Referenz: Ethnicity: Global database

OCULUS Corvis® ST - Homburg Biomechanical E-Staging (BEST)

1.7.2014

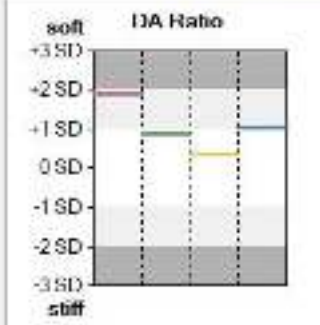
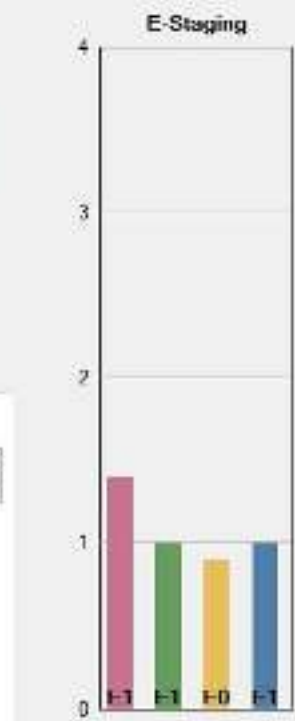
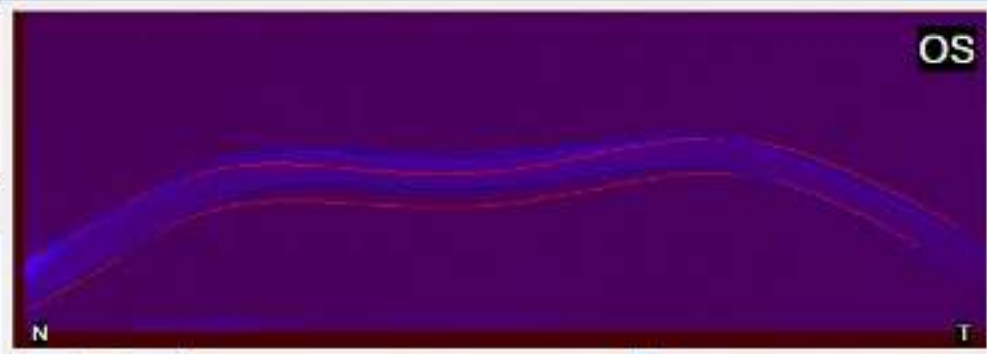
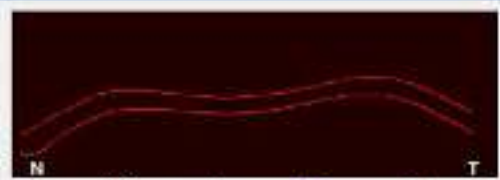
Patient Examination Display Export Settings External software

F-Mail AVI JSG

Name:

Select 4 exams:
Right Eye
Left Eye

- Exam (Left (OS) OS)
- 28.10.2007 OK
 - 10.05.11 OK
 - 06.02.2013 OK
 - 14.04.10 OK
 - 05.02.2014 OK
 - 14.01.14 OK
 - 11.11.2014 OK
 - 14.04.10 OK

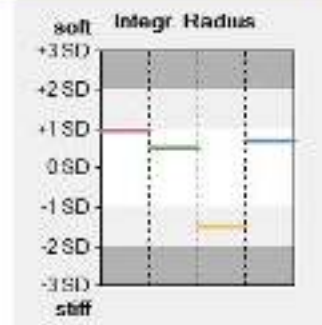


| | | | | |
|--------|-----|-----|------|-----|
| Value: | 9.1 | 8.6 | 6.4 | 8.8 |
| SD: | 0.9 | 0.5 | -1.5 | 0.7 |

BaseLine @

Changes from baseline exam:

| | | | |
|-------------|------|------|------|
| Diff. line: | 1.3y | 2.3y | 3.1y |
| Diff. SD: | -1.0 | -1.5 | -0.9 |
| Stiffer | | ✓ | |
| not sign. | ✓ | | ✓ |
| softer | | | |

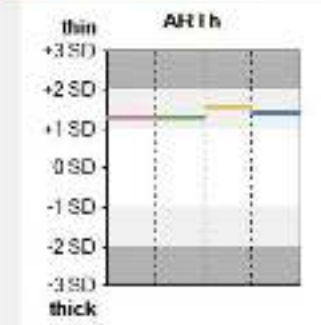


| | | | | |
|--------|-----|------|-----|-----|
| Value: | 7.5 | 10.6 | 9.0 | 8.4 |
| SD: | 1.9 | 0.3 | 0.7 | 1.5 |

BaseLine @

Changes from baseline exam:

| | | | |
|-------------|------|------|------|
| Diff. line: | 1.3y | 2.3y | 3.1y |
| Diff. SD: | -0.5 | -2.5 | -0.3 |
| Stiffer | | ✓ | |
| not sign. | ✓ | | ✓ |
| softer | | | |

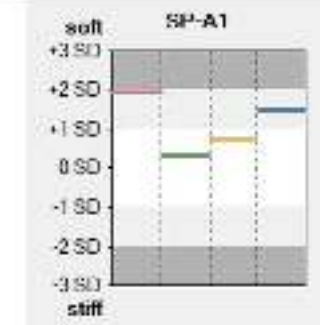


| | | | | |
|--------|-----|------|------|------|
| Value: | 0.8 | 1.1 | 1.3 | 1.0 |
| SD: | 0.7 | -0.3 | -1.3 | -0.1 |

BaseLine @

Changes from baseline exam:

| | | | |
|-------------|------|------|------|
| Diff. line: | 1.3y | 2.3y | 3.1y |
| Diff. SD: | -0.0 | 0.0 | 0.7 |
| Thicker | | | |
| not sign. | ✓ | | ✓ |
| thinner | | ✓ | |

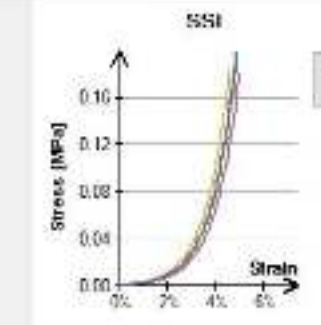


| | | | | |
|--------|-----|------|------|------|
| Value: | 0.8 | 1.1 | 1.3 | 1.0 |
| SD: | 0.7 | -0.3 | -1.3 | -0.1 |

BaseLine @

Changes from baseline exam:

| | | | |
|-------------|------|------|------|
| Diff. line: | 1.3y | 2.3y | 3.1y |
| Diff. SD: | -1.0 | -1.2 | -0.5 |
| Stiffer | ✓ | ✓ | |
| not sign. | | | ✓ |
| softer | | | |



| | | | | |
|--------|-----|------|------|------|
| Value: | 0.8 | 1.1 | 1.3 | 1.0 |
| SD: | 0.7 | -0.3 | -1.3 | -0.1 |

BaseLine @

Changes from baseline exam:

| | | | |
|-------------|------|------|------|
| Diff. line: | 1.3y | 2.3y | 3.1y |
| Diff. SD: | -1.0 | -2.0 | -0.0 |
| Stiffer | ✓ | ✓ | ✓ |
| not sign. | | | |
| softer | | | |

| | | | | |
|-------|-----|-----|-----|-----|
| CBIF: | 5.7 | 5.9 | 6.0 | 5.9 |
|-------|-----|-----|-----|-----|

| | | | | |
|----------|-----|-----|-----|-----|
| E-Stage: | 1.4 | 1.0 | 0.9 | 1.0 |
|----------|-----|-----|-----|-----|

BaseLine @

Changes from baseline exam:

| | | | |
|--------------|------|------|------|
| Diff. line: | 1.3y | 2.3y | 3.1y |
| Diff. Stage: | -0.4 | 0.3 | 0.4 |
| No Prog. | ✓ | ✓ | ✓ |
| Progress: | | | |

Referenz: Ethnicity: Global/darshan

EOS

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Münchholzhäuser Str. 29

35582 Wetzlar

Tel: (0641) 20 05-0
Fax: (0641) 20 05-255

www.oculus.de



Post ICRS

EOS 2025

EGYPTIAN OPHTHALMOLOGICAL SOCIETY

OCULUS - PENTACAM 4 Maps Selectable

1.2515

Last Name: XXXXXXXXXX
 First Name: XXXXXXXXXX
 ID: XXXXXXXXXX
 Date of Birth: 02/01/1988 Eye: Left
 Exam Date: 04/04/2017 Time: 10:08:30
 Exam Info: XXXXXXXXXX

Cornea Front

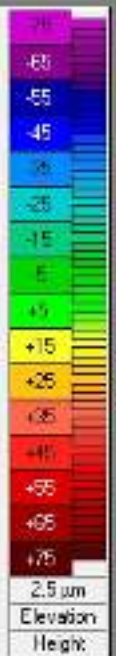
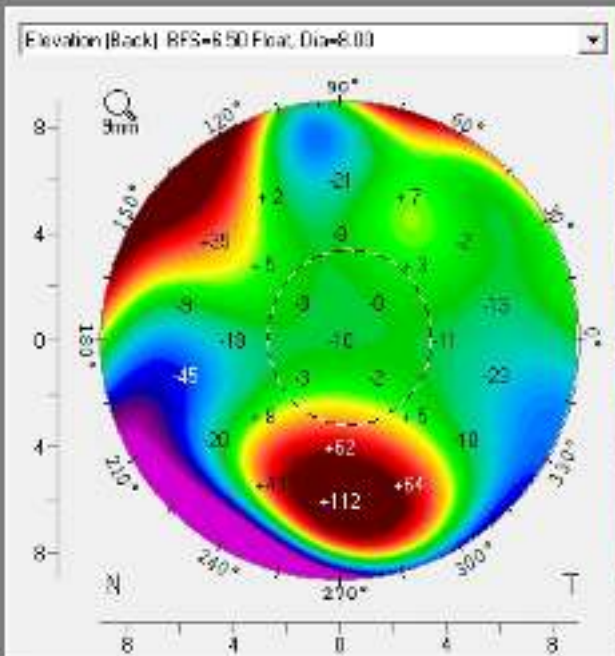
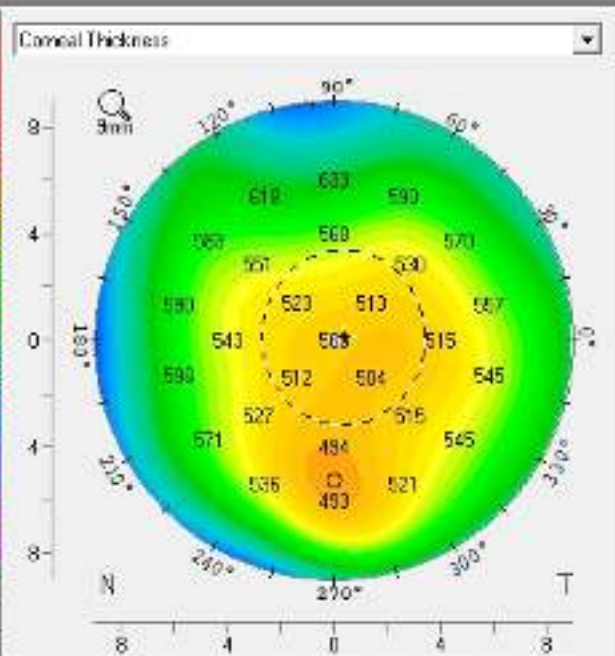
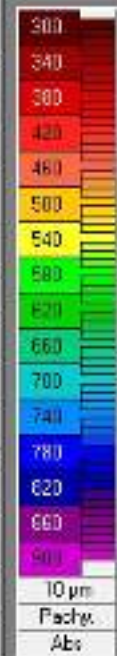
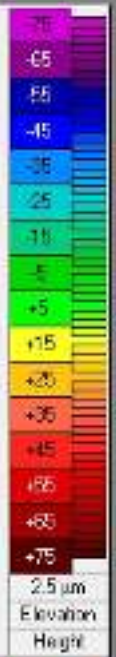
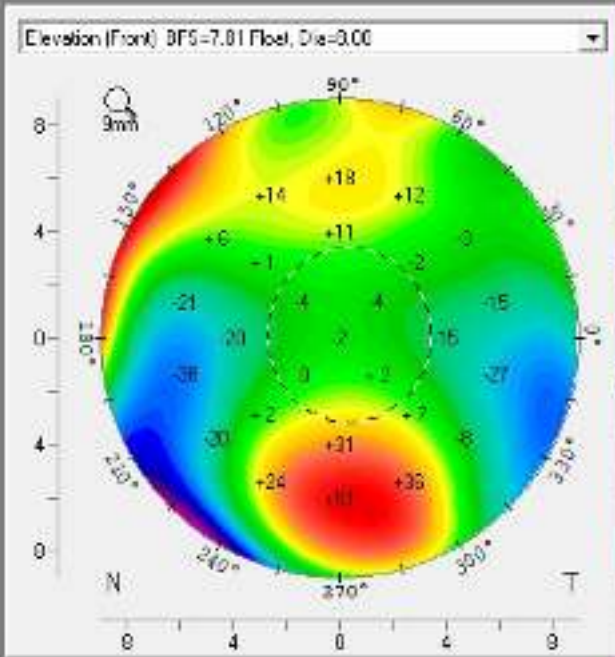
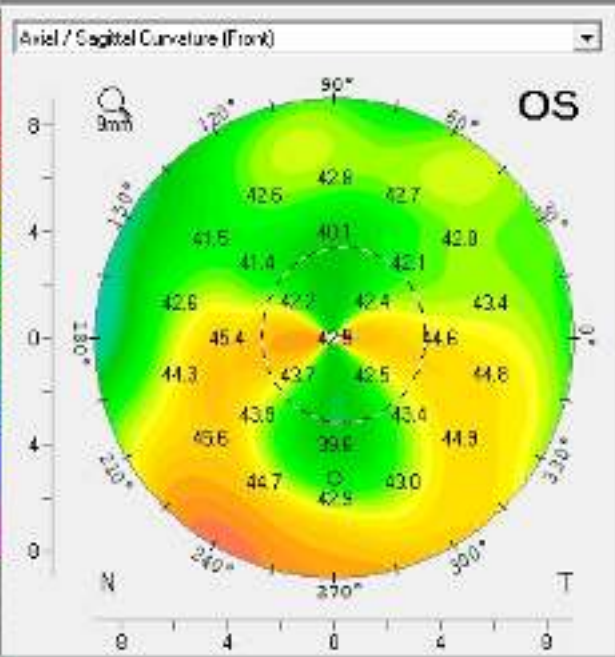
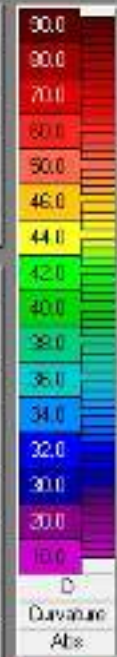
R1: 3.55 mm K1: 33.5 D
 R2: 7.40 mm K2: 45.6 D
 Rmc: 7.98 mm Kmc: 42.3 D
 OS: DK Axis (Rad): 32.5° Astig: 5.2 D
 Q-val (30°): 0.02 Floor: 7.82 mm Rmr: 8.96 mm

Cornea Back

R1: 7.38 mm K1: 5.4 D
 R2: 5.36 mm K2: 6.0 D
 Rmc: 5.88 mm Kmc: 5.8 D
 QS: DK Axis (Rad): 39.5° Astig: 0.9 D
 Q-val (30°): 0.05 Floor: 5.47 mm Rmr: 5.20 mm

Pupil Center: x: 307 μm y: -0.13 z: -0.05
 Pachy-Vertex N: 306 μm
 Thinnest Locat: 488 μm
 K Max. (Front): 49.2 D

Cornea Volume: 57.0 mm³ KPD: -0.9 D
 Chamber Volume: 148 mm³ Angle: 38.2°
 A. C. Depth (Int.): 2.92 mm Pupil Dia: 3.17 mm
 Extra IOP (ICP(Sun)): 42.8 mmHg Lens Th:



OCULUS - PENTACAM 4 Maps Selectable

1.2515

Last Name: XXXXXXXXXX
 First Name: XXXXXXXXXX
 ID: XXXXXXXXXX
 Date of Birth: 02/01/1968 Eye: Left
 Exam Date: 04/08/2017 Time: 20:00:40
 Exam Info:

Cornea Front

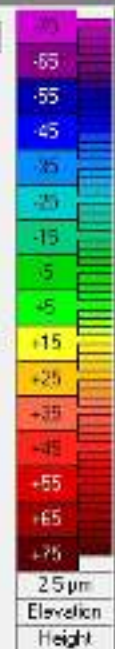
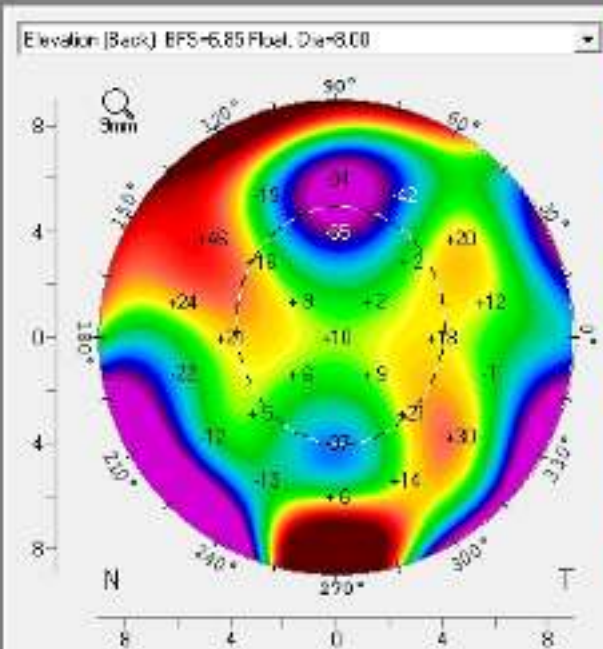
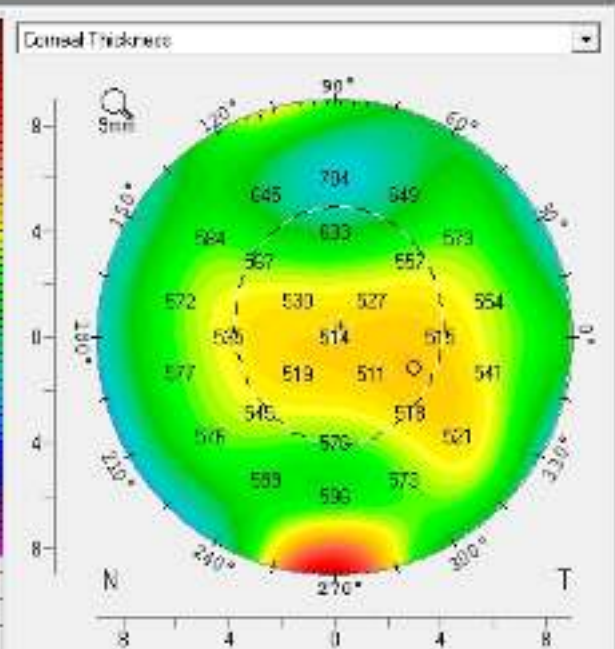
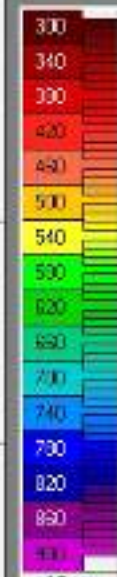
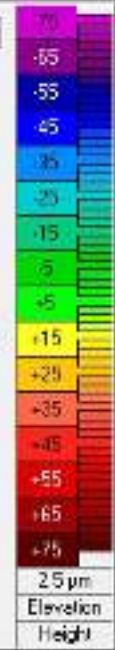
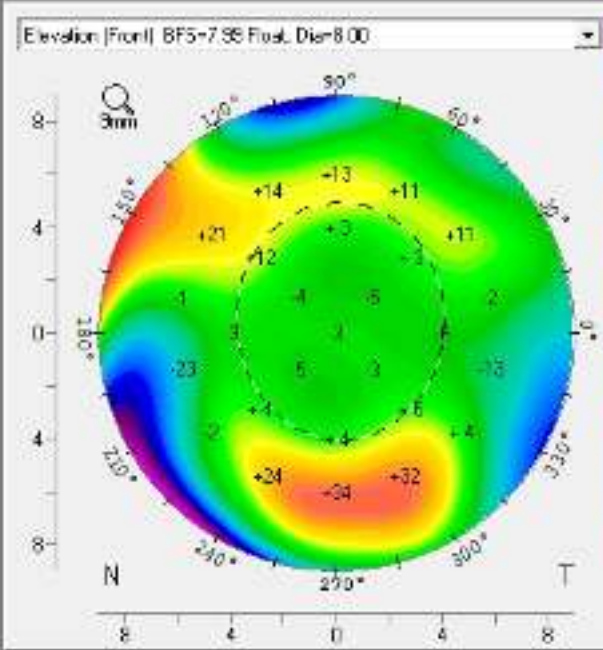
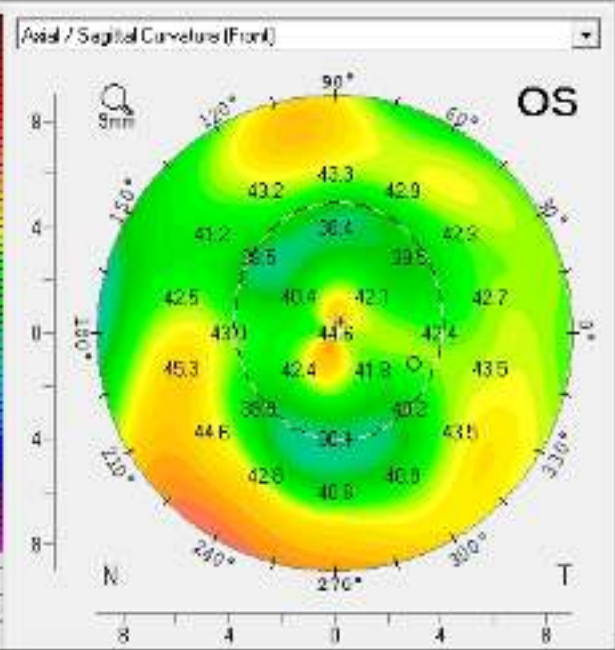
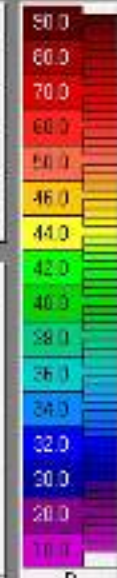
| | | | |
|--------------|---------|-------------|---------|
| Rr: | 6.44 mm | K1: | 43.0 D |
| Ra: | 8.20 mm | K2: | 41.2 D |
| Rm: | 6.32 mm | Km: | 40.6 D |
| QS: | OK | Axis (Hof): | 125.5° |
| Q-val (30°): | 0.96 | Asig: | 1.2 D |
| | Rpet: | Rmix: | 6.01 mm |

Cornea Back

| | | | |
|--------------|---------|-------------|---------|
| Rr: | 7.13 mm | K1: | -5.6 D |
| Ra: | 5.77 mm | K2: | -6.9 D |
| Rm: | 6.45 mm | Km: | -5.2 D |
| QS: | Data B | Axis (Hof): | 174.6° |
| Q-val (30°): | -0.60 | Asig: | 1.3 D |
| | Rpet: | Rmix: | 5.36 mm |

| | Pachy: | x[mm] | y[mm] |
|------------------|----------|-------|-------|
| Pupil Center: | + 517 μm | +0.08 | +0.22 |
| Pachy Vertex N.: | - 514 μm | 0.00 | 0.00 |
| Thinnest Locat.: | ○ 504 μm | +1.48 | 0.58 |
| K Max (Front): | 49.6 D | 2.38 | 3.85 |

| | | | |
|-----------------------|----------------------|-------------|---------|
| Cornea Volume: | 55.7 mm ³ | KPO: | -1.2 D |
| Chamber Volume: | 160 mm ³ | Angle: | 40.1° |
| A. C. Depth (In.): | 3.01 mm | Pupil Dis.: | 4.20 mm |
| Extra IOP IOP(Sun): | 47.2 mmHg | Lens Th.: | |



OCULUS - PENTACAM Compare 2 Exams

1.25.15

Name: [REDACTED]

ID: [REDACTED]

Date of Birth:

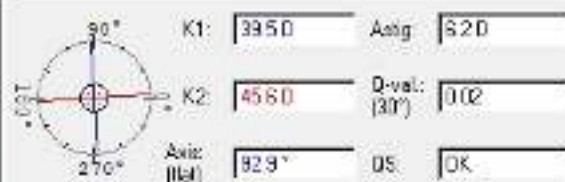
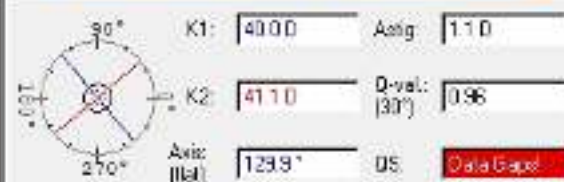
02/01/1988

Exam

A: 04/08/2017 20:02:36 Left (25) 30-Scan HR

B: 04/04/2017 10:06:30 Left (25) 30-Scan HR

Difference A - B



Pachy: x(mm) y(mm)

Pachy: x(mm) y(mm)

Pachy: x(mm) y(mm)

Pupil Center: + 517 μm -0.20 +0.17

Pupil Center: + 507 μm -0.18 +0.05

Pupil Center: + -10 μm +0.01 -0.12

Thinnest Locat.: ○ 501 μm -1.64 -0.72

Thinnest Locat.: ○ 499 μm 0.00 -2.61

Thinnest Locat.: ○ -13 μm +1.64 -1.69

Chamber Volume: 153 mm³ Angle: 44.9°

Chamber Volume: 148 mm³ Angle: 38.2°

Chamber Volume: -5 mm³ Angle: +6.7°

A. C. Depth (Int.): 3.03 mm Pupil Dia: 3.56 mm

A. C. Depth (Int.): 2.92 mm Pupil Dia: 3.17 mm

A. C. Depth (Int.): -0.11 mm Pupil Dia: +0.81 mm

ICP(cox): Lens Th.:

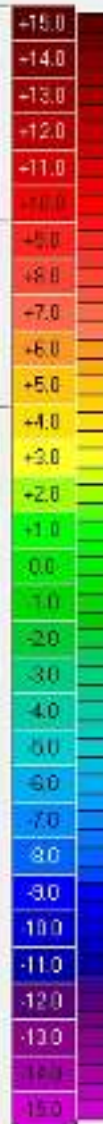
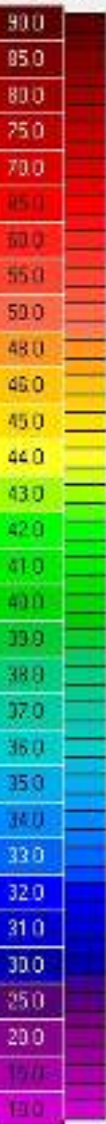
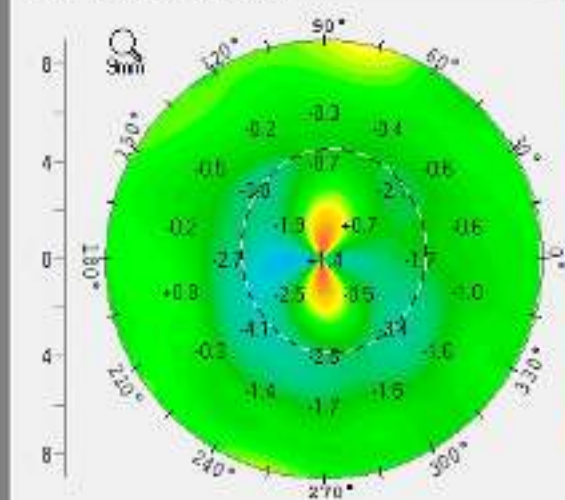
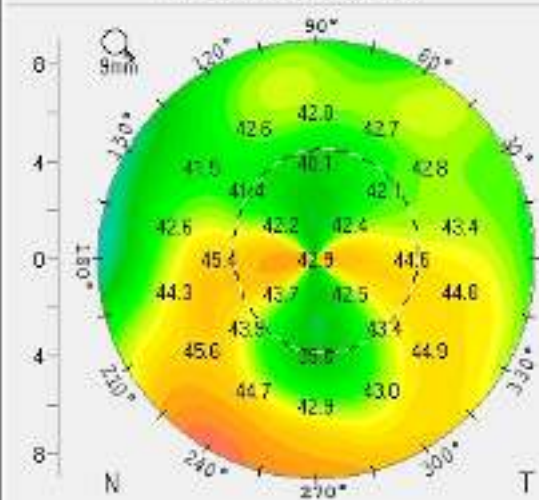
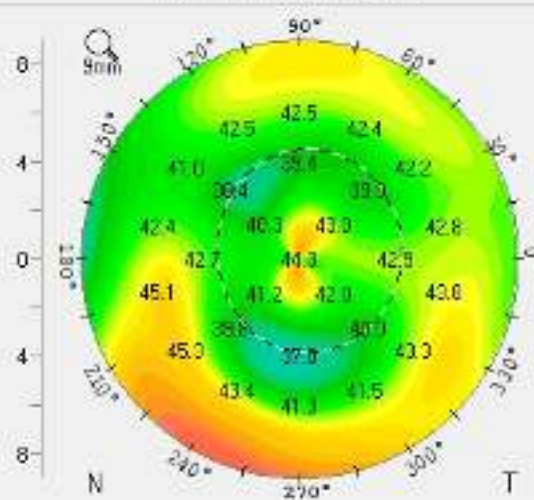
ICP(cox): Lens Th.:

IOP(cox): Lens Th.:

Axial / Sagittal Curvature (Front)

Axial / Sagittal Curvature (Front)

Axial / Sagittal Curvature (Front)



OCULUS Corvis® ST - Homburg Biomechanical E-Staging (BEST)

1/27/17

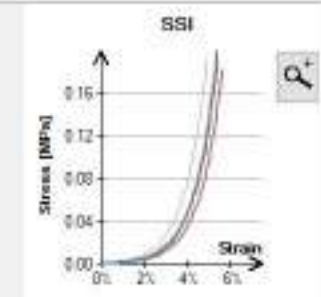
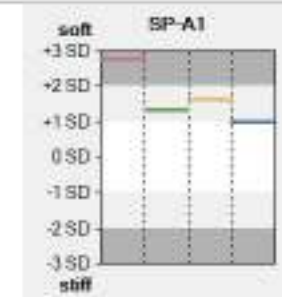
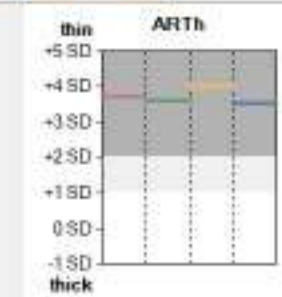
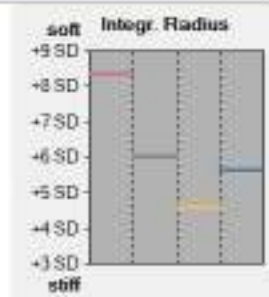
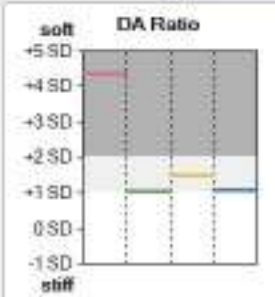
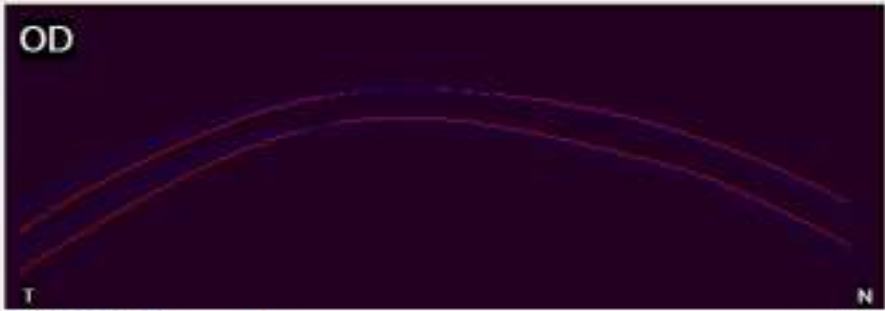
E-Mail: AVI_B@oculus.de

Patient Examination Display Export Settings

Name: [REDACTED] ID: unilatKC post ICRS Date of birth: 01.09.1985 Age: 34 Eye: Right (OD)

Select 4 exams Right Eye
Select 4 exams Left Eye

- Exam: Right (OD) 05
- 13.01.2022¹ OK
- 12.02.22
- 14.12.2021¹ OK
- 13.09.24
- 17.10.2021¹ AL
- 12.02.18
- 09.10.2021¹ OK
- 12.02.21



Value: 5.3 4.7 4.9 4.7
SD: 4.4 1.0 1.5 1.1

Value: 17.4 14.8 13.2 14.4
SD: 8.4 6.0 4.6 5.6

Value: 98 111 60 124
SD: 3.7 3.6 4.0 3.5

Value: 59 87 81 93
SD: 2.8 1.3 1.6 1.0

Value: 0.5 0.6 0.6 0.6
SD: 2.5 1.8 1.6 1.8

CBif: 4.2 4.6 4.6 5.0
E-Stage: 3.9 3.2 3.2 2.5

Changes from baseline exam:

| | | | |
|-------------|------|------|------|
| Diff. line: | 0.9y | 2.0y | 3.8y |
| Diff. SD: | -3.3 | -2.9 | -3.3 |
| Stiffer | ✓ | ✓ | ✓ |
| not sign | | | |
| softer | | | |

Changes from baseline exam:

| | | | |
|-------------|------|------|------|
| Diff. line: | 0.9y | 2.0y | 3.8y |
| Diff. SD: | -2.3 | -3.8 | -2.7 |
| Stiffer | ✓ | ✓ | ✓ |
| not sign | | | |
| softer | | | |

Changes from baseline exam:

| | | | |
|-------------|------|------|------|
| Diff. line: | 0.9y | 2.0y | 3.8y |
| Diff. SD: | 0.1 | 0.3 | -0.2 |
| Thicker | | | |
| not sign | ✓ | | ✓ |
| thinner | | | |

Changes from baseline exam:

| | | | |
|-------------|------|------|------|
| Diff. line: | 0.9y | 2.0y | 3.8y |
| Diff. SD: | -1.5 | -1.1 | -1.8 |
| Stiffer | ✓ | ✓ | ✓ |
| not sign | | | |
| softer | | | |

Changes from baseline exam:

| | | | |
|-------------|------|------|------|
| Diff. line: | 0.9y | 2.0y | 3.8y |
| Diff. SD: | -0.7 | -0.9 | -0.7 |
| Stiffer | ✓ | ✓ | ✓ |
| not sign | | | |
| softer | | | |

Changes from baseline exam:

| | | | |
|-------------|------|------|------|
| Diff. line: | 0.9y | 2.0y | 3.8y |
| Diff. SD: | -0.7 | -0.7 | -1.4 |
| No Prog. | ✓ | ✓ | ✓ |
| Progress | | | |

Reference: Clinically / Global database

Post ICRS

EOS 2021
EGYPTIAN OPTIC

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Münchholzhäuser Str. 29

35582 Wetzlar

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Fax: (0641) 20 05-255

www.oculus.de





EOS 2025

EGYPTIAN OPHTHALMOLOGICAL SOCIETY

Diagnosis of Post LVC Ectasia.

EOS 2025

EGYPTIAN OPHTHALMOLOGICAL SOCIETY

CBI LVC

EOS 2025

EGYPTIAN OPHTHALMOLOGICAL SOCIETY

Post Elevation Post LVC

EOS 2025

EGYPTIAN OPHTHALMOLOGICAL SOCIETY

OCULUS - PENTACAM 4 Maps Selectable

1.2915

Last Name: XXXXXXXXXX
 First Name: XXXXXXXXXX
 ID: 461777
 Date of Birth: 08/31/1993 Eye: Left
 Exam Date: 11/22/2021 Time: 14:25:04
 Exam Info:

Cornea Front

| | | | |
|----|---------|-----|--------|
| Rr | 7.07 mm | K1 | 42.9 D |
| Rs | 7.67 mm | K2 | 44.0 D |
| Rm | 7.77 mm | Kav | 43.4 D |

QC: OK Axis (H-L) 175.5° Astig 1.1 D
 Q-val (30°) -0.38 Rper 8.10 mm Rmax 7.52 mm

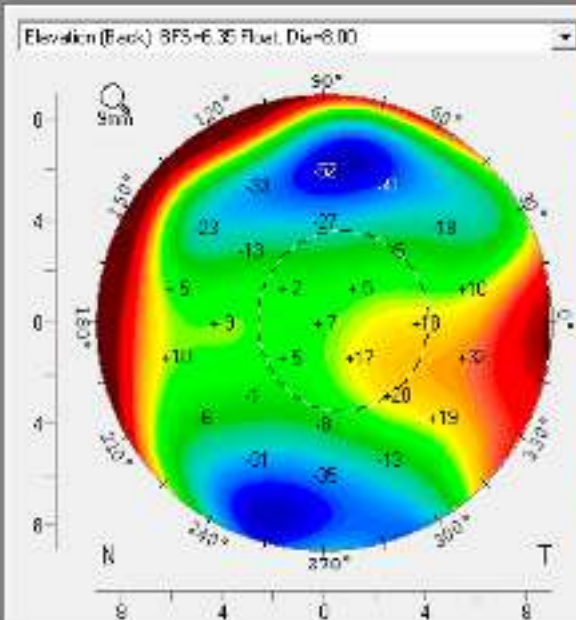
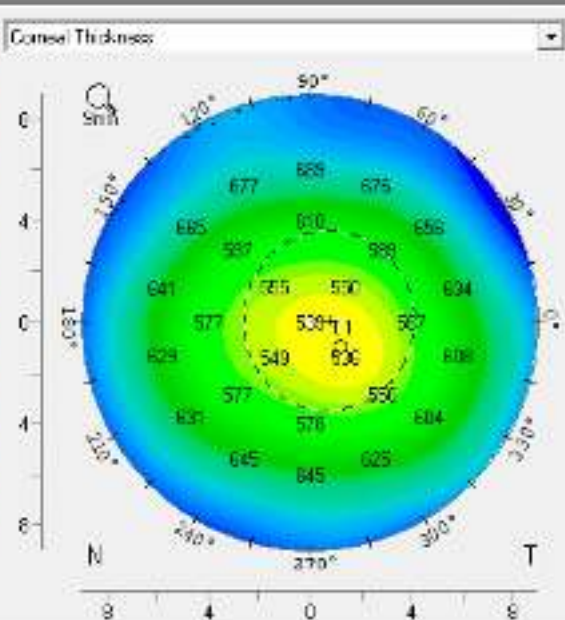
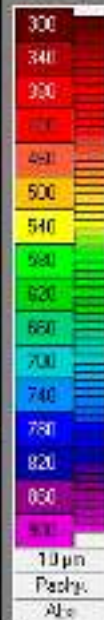
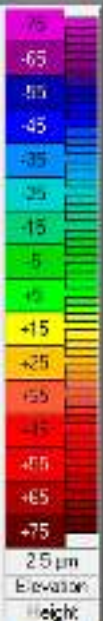
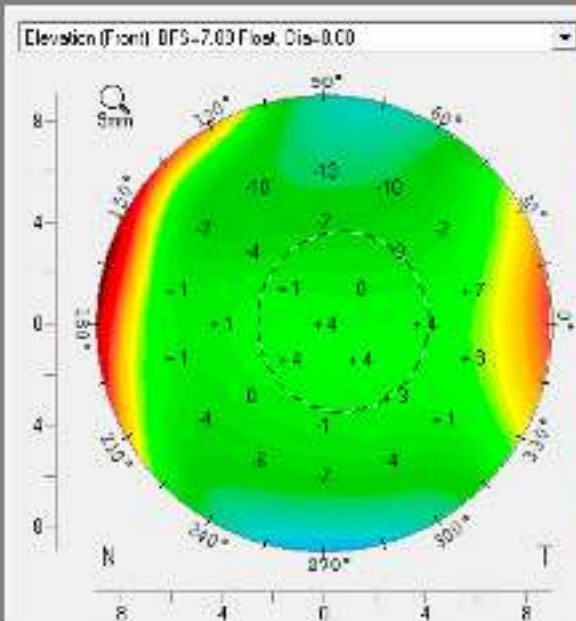
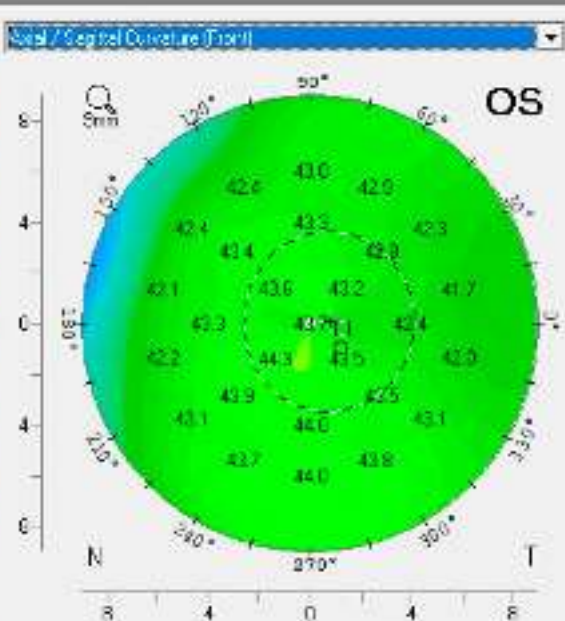
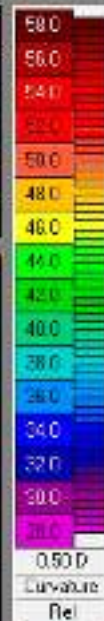
Cornea Back

| | | | |
|----|---------|-----|--------|
| Rr | 6.50 mm | K1 | -6.1 D |
| Rs | 5.90 mm | K2 | -6.6 D |
| Rm | 6.20 mm | Kav | -6.4 D |

QC: OK Axis (H-L) 173.0° Astig 0.0 D
 Q-val (30°) -0.47 Rper 6.78 mm Rmax 5.81 mm

| | | | | | | | |
|-----------------|---|-------|--------|-------|-------|-------|-------|
| Pupil Center | + | Pachy | 538 µm | x(mm) | -0.38 | y(mm) | +0.03 |
| Pachy Vertex N. | | | 533 µm | | 0.00 | | 0.00 |
| Thinnest Locat. | ○ | | 535 µm | | -0.00 | | -0.47 |
| K Max (Front) | | | 44.9 D | | 0.07 | | 0.54 |

| | | | |
|---------------------|----------------------|-----------|---------|
| Cornea Volume | 62.1 mm ³ | HWTW | 11.5 mm |
| Chamber Volume | 792 mm ³ | Angle | 33.6° |
| A.C. Depth (Int.) | 2.91 mm | Pupil Dia | 2.45 mm |
| Enter IOP (DPM/Sun) | 10.4 mmHg | Lens Th. | |



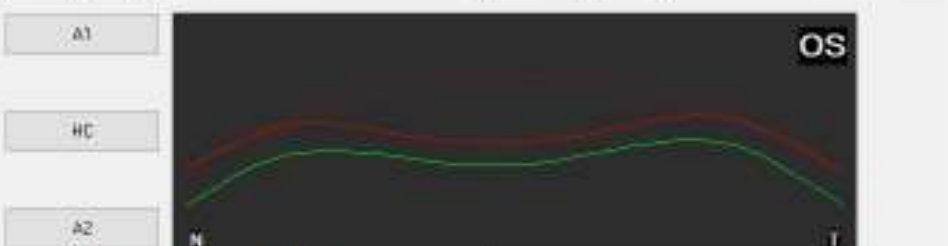
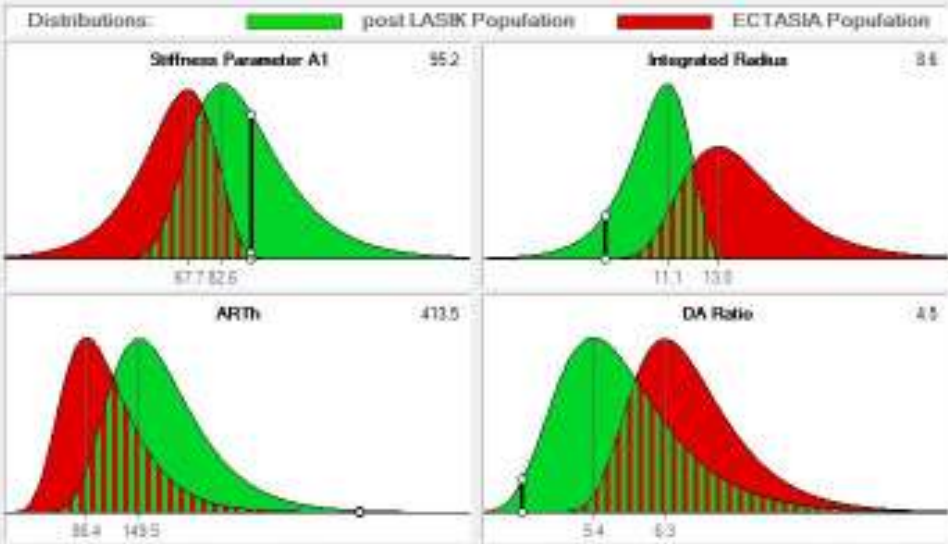
OCULUS Corvis® ST - Biomechanical/Tomographic Assessment (ARV)

162503

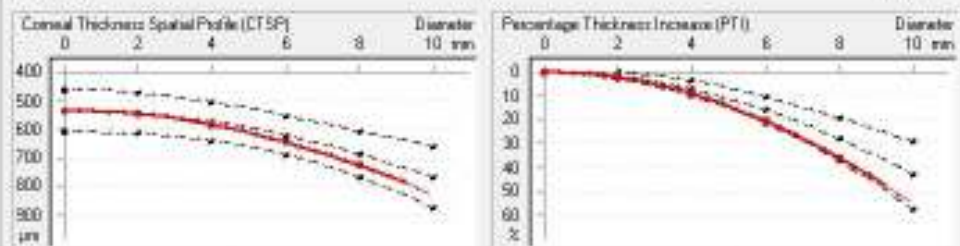
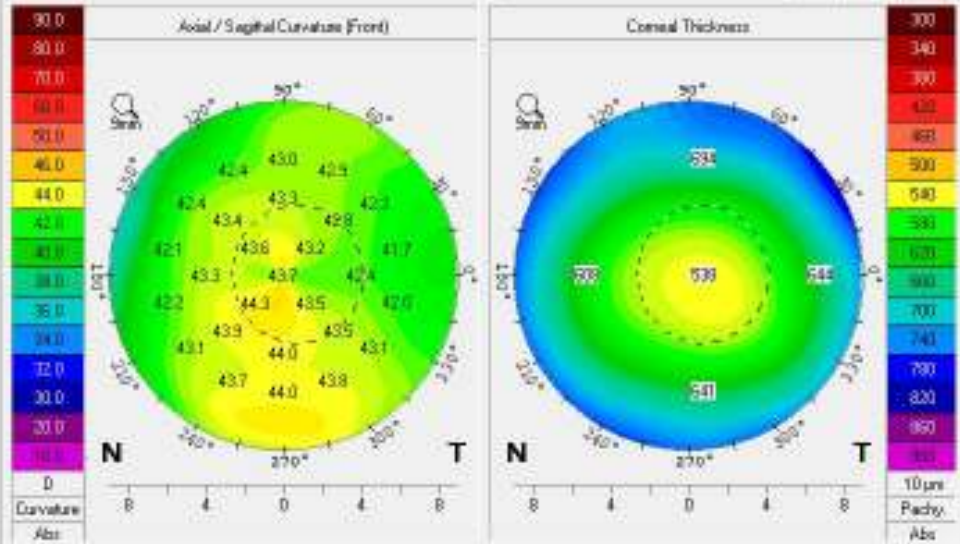
Name: [REDACTED] ID: 461777
 Exam. Date: [REDACTED] Time: 14:35:48 Eye: Left (OS) OS: OK

Date of birth: 01.08.1993 Age: 28
 Exam. Date: 22.11.2021 Time: 14:25:04 Eye: Left (OS) OS: OK

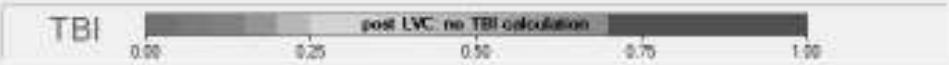
Corvis ST - Biomechanical Assessment



Pentacam - Tomographic Assessment



K Max: 44.9 D IS Value: 0.9 D PRFI: 0.28 TNC:
 BAD D █ post LVC: no BAD D calculation
 myopic hyperopic



EOS 2
 EGYPTIAN

Oculus Optikgeräte GmbH
 Münchholzhauser Str. 29

35582 Wetzlar

Tel: (0641) 20 05-0
 Fax: (0641) 20 05-255

www.oculus.de



OCULUS - PENTACAM 4 Maps Selectable

1.2915

Last Name: XXXXXXXXXX
 First Name: XXXXXXXXXX
 ID: 461777
 Date of Birth: 08/01/1946 Eye: Left
 Exam Date: 12/18/2017 Time: 13:22:12
 Exam Info:

Cornea Front:

| | |
|-------------|-------------|
| RI: 7.73 mm | K1: 43.7 D |
| Rc: 7.28 mm | K2: 45.4 D |
| Rm: 7.58 mm | Kmc: 45.0 D |

OS: OK Axis (Flat): 174.2° Axis: 2.7 D
 Q-val (30°): -0.50 Rper: 7.07 mm Rmin: 7.17 mm

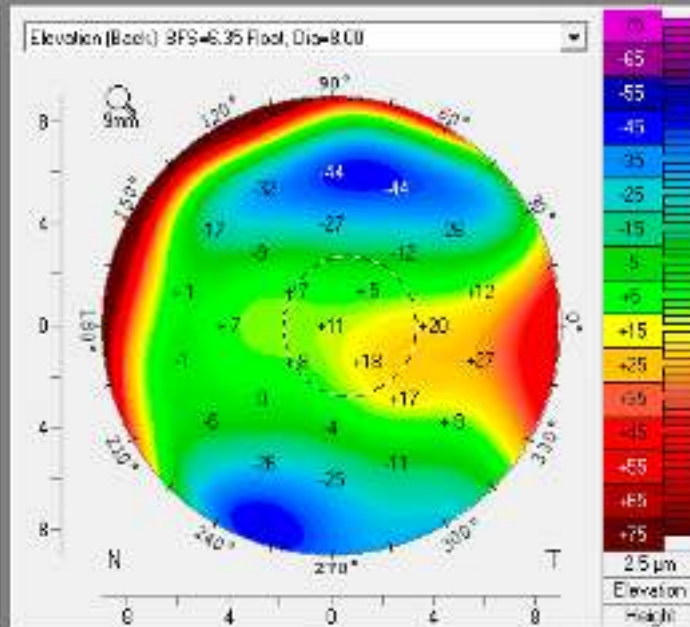
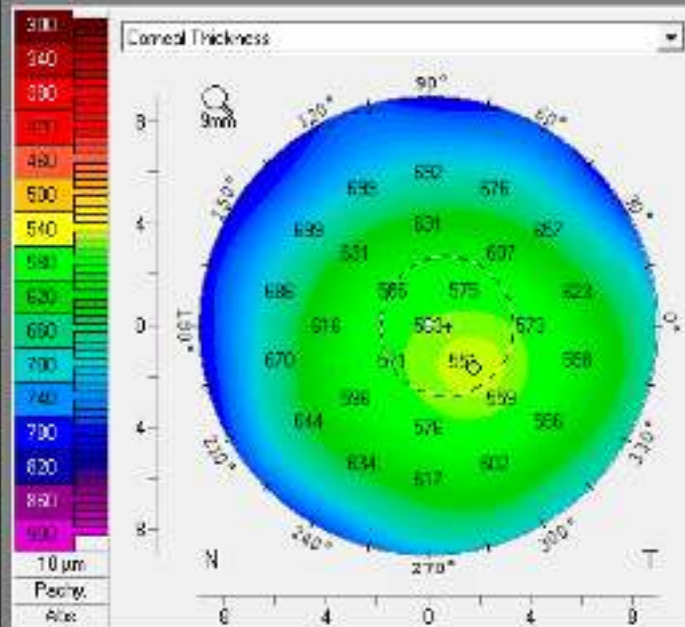
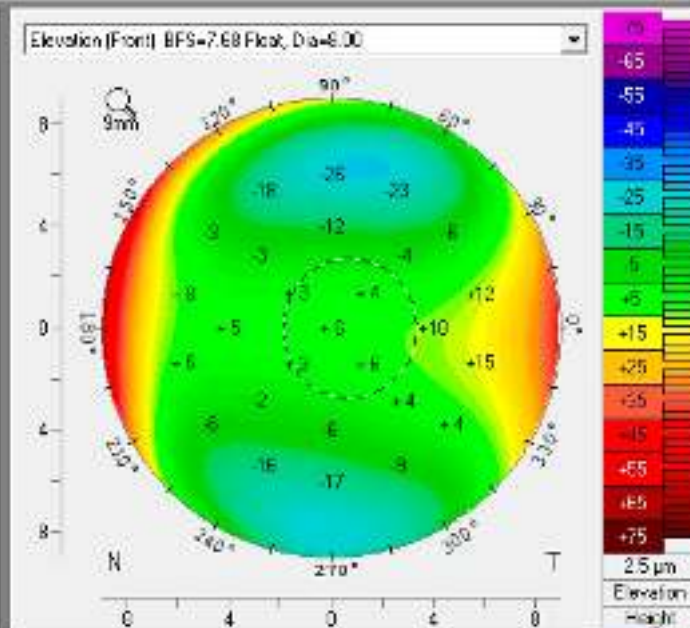
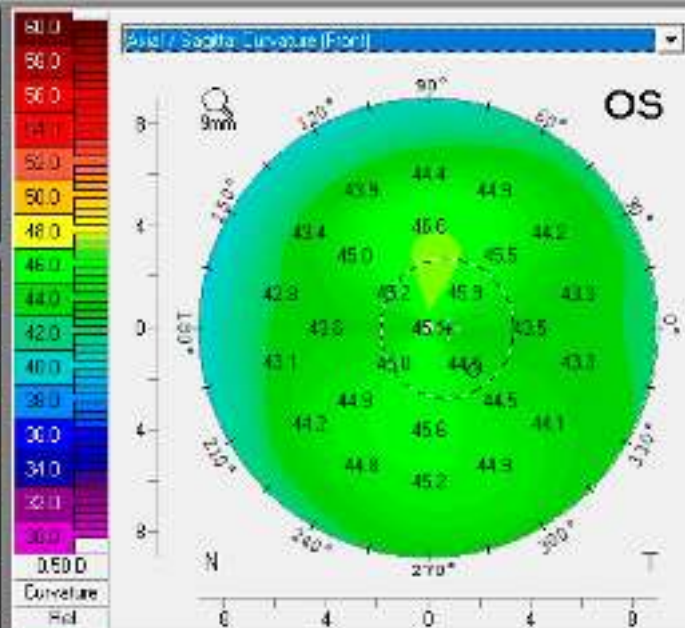
Cornea Back:

| | |
|-------------|------------|
| RI: 6.41 mm | K1: 6.2 D |
| Rc: 5.96 mm | K2: 6.6 D |
| Rm: 6.14 mm | Kmc: 6.5 D |

OS: OK Axis (Flat): 166.0° Axis: 0.6 D
 Q-val (30°): -0.45 Rper: 6.67 mm Rmin: 6.77 mm

| | Pachyr | x(mm) | y(mm) |
|------------------|----------|-------|-------|
| Pupil Center: | + 550 μm | +0.37 | -0.02 |
| Pachy Vertex R.: | 502 μm | 0.00 | 0.00 |
| Thinnest Locat.: | Q 500 μm | +0.89 | 0.82 |
| K Max (Front): | 47.1 D | +0.14 | +1.15 |

| | | | |
|----------------------|----------------------|------------|---------|
| Cornea Volume: | 62.9 mm ³ | KPD: | +1.3 D |
| Chamber Volume: | 171 mm ³ | Angle: | 37.1° |
| A. C. Depth (Int.): | 2.98 mm | Pupil Dia: | 2.97 mm |
| Enter IOP: IOP(Sum): | 1.9 mmHg | Lens Th: | |



OCULUS - PENTACAM Compare 2 Exams

1.2515

Name: [REDACTED]

ID: 451777

Date of Birth:

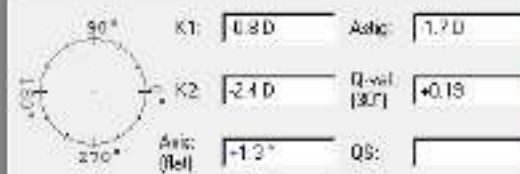
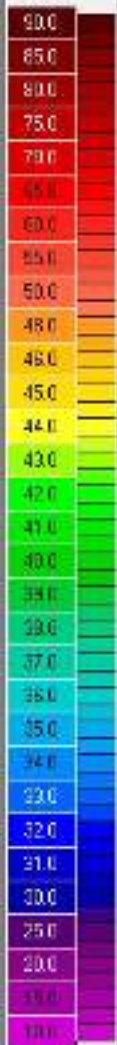
03/01/1993

Exam

A: 0 11/22/2017 14:25:04 (L) (2) 3D Scan HR

B: R 12/18/2017 13:22:12 (L) (25) 3D Scan HR

Difference A - B



| | Pachy | x(mm) | y(mm) |
|-----------------|----------|-------|-------|
| Pupil Center: | - 536 μm | +0.38 | +0.03 |
| Thinnest Local: | ○ 532 μm | +0.60 | 0.47 |

| | Pachy | x(mm) | y(mm) |
|-----------------|----------|-------|-------|
| Pupil Center: | + 560 μm | +0.37 | 0.02 |
| Thinnest Local: | ○ 520 μm | +0.89 | 0.82 |

| | Pachy | x(mm) | y(mm) |
|-----------------|---------|-------|-------|
| Pupil Center: | + 22 μm | +0.01 | -0.05 |
| Thinnest Local: | ○ 15 μm | 0.29 | -0.35 |

| | | | |
|-----------------|---------------------|--------|-------|
| Chamber Volume: | 132 mm ³ | Angle: | 30.0° |
|-----------------|---------------------|--------|-------|

| | | | |
|-----------------|---------------------|--------|-------|
| Chamber Volume: | 171 mm ³ | Angle: | 37.1° |
|-----------------|---------------------|--------|-------|

| | | | |
|-----------------|---------------------|--------|-------|
| Chamber Volume: | -21 mm ³ | Angle: | -3.5° |
|-----------------|---------------------|--------|-------|

| | | | |
|---------------------|---------|------------|---------|
| A. C. Depth (Int.): | 2.91 mm | Pupil Dia: | 3.45 mm |
|---------------------|---------|------------|---------|

| | | | |
|---------------------|---------|------------|---------|
| A. C. Depth (Int.): | 2.93 mm | Pupil Dia: | 3.67 mm |
|---------------------|---------|------------|---------|

| | | | |
|---------------------|---------|------------|----------|
| A. C. Depth (Int.): | 0.07 mm | Pupil Dia: | +0.78 mm |
|---------------------|---------|------------|----------|

| | | | |
|-----------|--|----------|--|
| IOP (cal) | | Lens Th: | |
|-----------|--|----------|--|

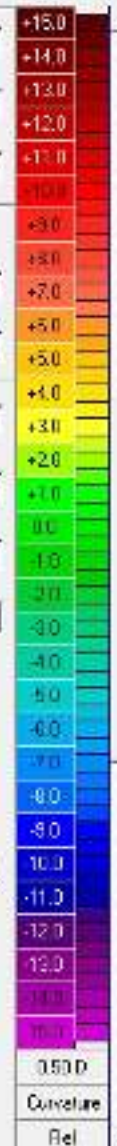
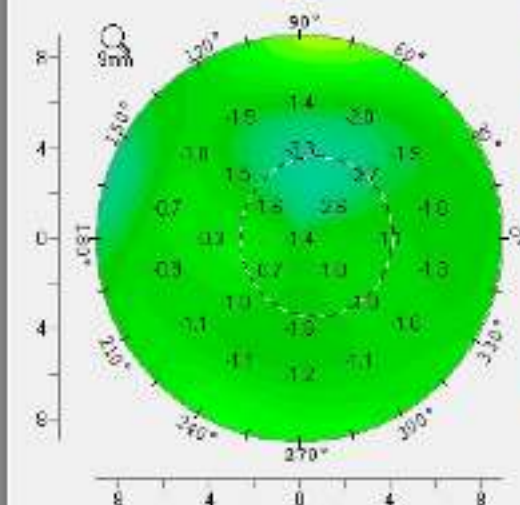
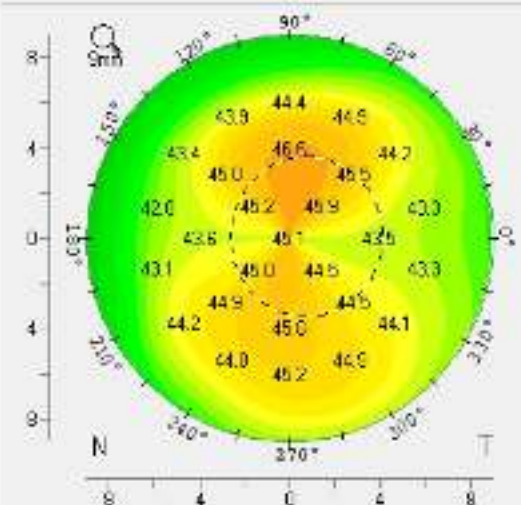
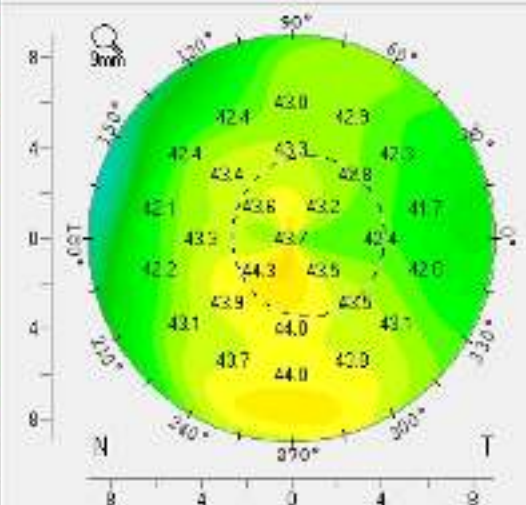
| | | | |
|-----------|--|----------|--|
| IOP (cal) | | Lens Th: | |
|-----------|--|----------|--|

| | | | |
|-----------|--|----------|--|
| IOP (cal) | | Lens Th: | |
|-----------|--|----------|--|

Axis / Sagittal Curvature (Front)

Axis / Sagittal Curvature (Front)

Axis / Sagittal Curvature (Front)



OCULUS - PENTACAM Compare 2 Exams

1.25.15

Name: [REDACTED]

ID: 461777

Date of Birth:

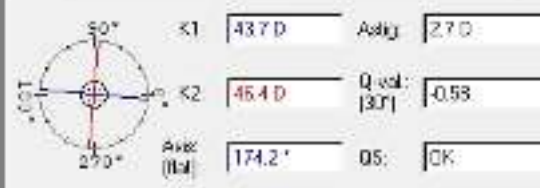
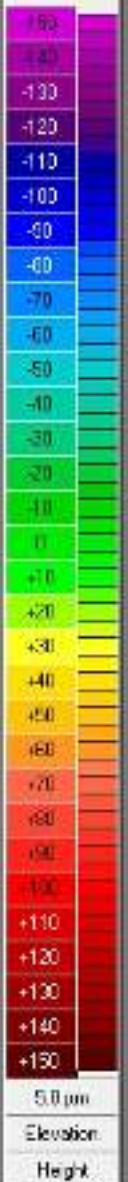
08/01/1993

Exam

A: [REDACTED] 04 Left (25) 30-Scan HR

B: [REDACTED] 12/18/2017 13:22:12 Left (25) 30-Scan HR

Difference A - B



| | Pachy: | x(mm) | y(mm) |
|------------------|----------|-------|-------|
| Pupil Center: | + 536 µm | +0.33 | -0.33 |
| Thinnest Locat.: | ○ 535 µm | +0.60 | -0.47 |

| | Pachy: | x(mm) | y(mm) |
|------------------|----------|-------|-------|
| Pupil Center: | + 550 µm | +0.37 | -0.02 |
| Thinnest Locat.: | ○ 550 µm | +0.69 | -0.62 |

| | Pachy: | x(mm) | y(mm) |
|------------------|---------|-------|-------|
| Pupil Center: | + 22 µm | +0.01 | -0.35 |
| Thinnest Locat.: | ○ 15 µm | -0.29 | -0.35 |

| | Chamber Volume: | Angle: |
|--|---------------------|--------|
| | 192 mm ³ | 32.6° |

| | Chamber Volume: | Angle: |
|--|---------------------|--------|
| | 171 mm ³ | 37.1° |

| | Chamber Volume: | Angle: |
|--|---------------------|--------|
| | +21 mm ³ | 3.5° |

| | A. C. Depth (Int.): | Pupil Dia: |
|--|---------------------|------------|
| | 2.91 mm | 3.45 mm |

| | A. C. Depth (Int.): | Pupil Dia: |
|--|---------------------|------------|
| | 2.90 mm | 2.67 mm |

| | A. C. Depth (Int.): | Pupil Dia: |
|--|---------------------|------------|
| | -0.07 mm | +0.78 mm |

| | IOP(cent): | Lens Th.: |
|--|------------|-----------|
| | | |

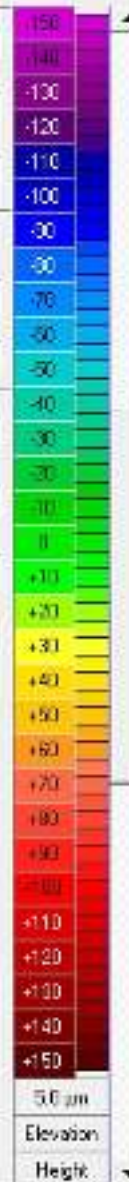
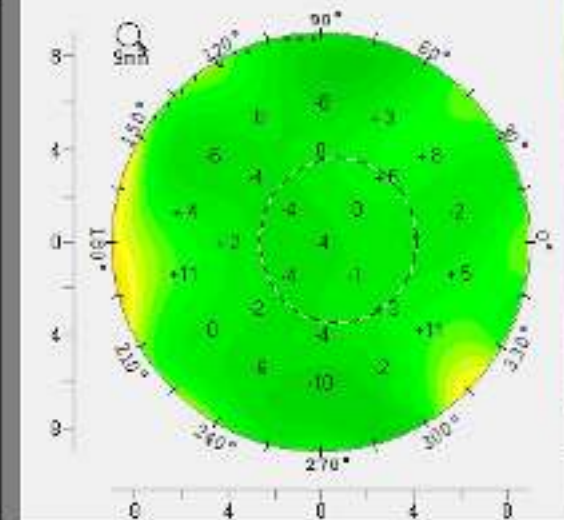
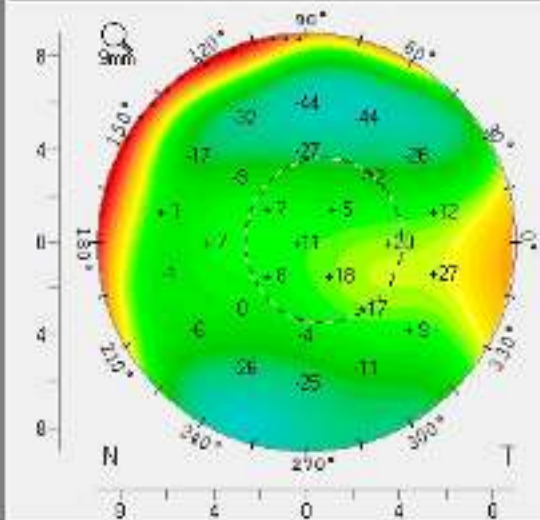
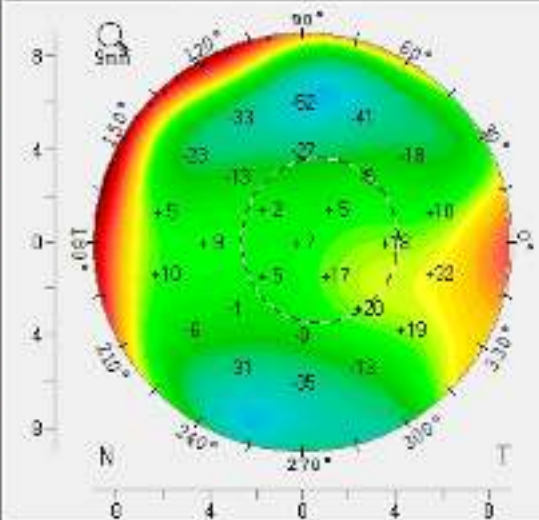
| | IOP(cent): | Lens Th.: |
|--|------------|-----------|
| | | |

| | IOP(cent): | Lens Th.: |
|--|------------|-----------|
| | | |

Elevation (Back)
BFS=6.35 Flaxt. Dia=9.00

Elevation (Back)
BFS=6.35 Flaxt. Dia=9.00

Elevation (Back)



Unilateral Post LVC Ectasia?

EOS 2025

EGYPTIAN OPHTHALMOLOGICAL SOCIETY

OCULUS - PENTACAM 4 Maps Selectable

1.30:04

Last Name: XXXXXXXXXX
 First Name: XXXXXXXXXX
 ID: XXXXXXXXXX
 Date of Birth: 12/24/1974 Eye: Right
 Exam Date: 12/16/2024 Time: 10:52:29
 Exam Info:

Cornea Front

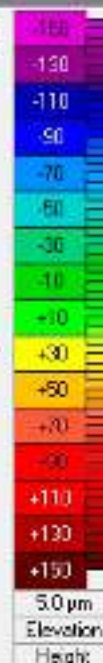
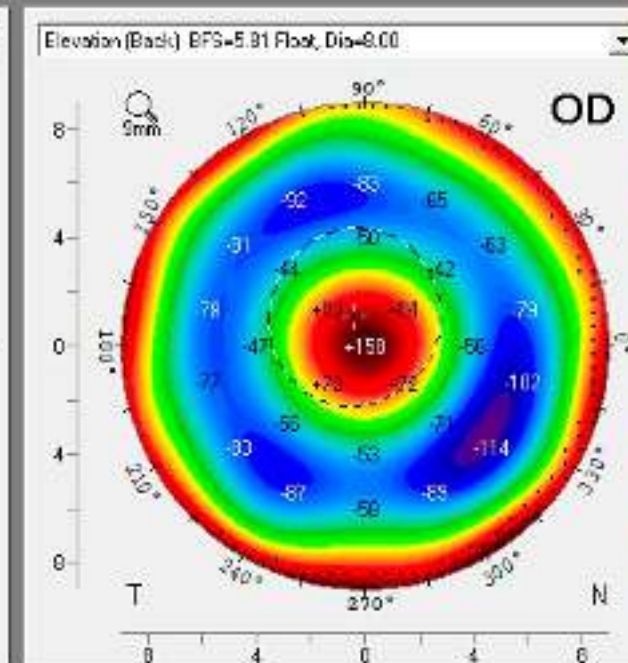
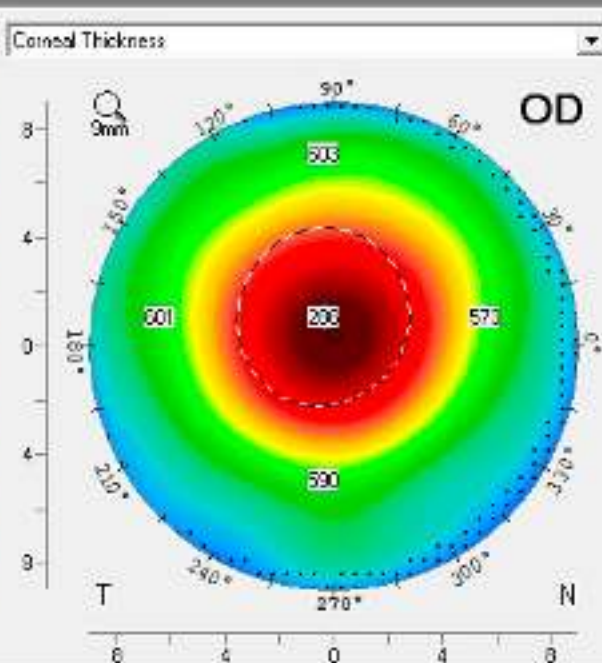
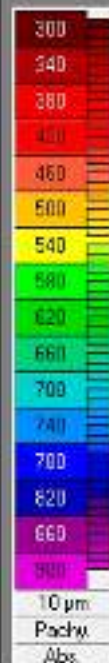
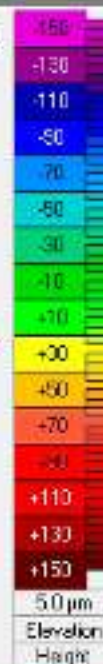
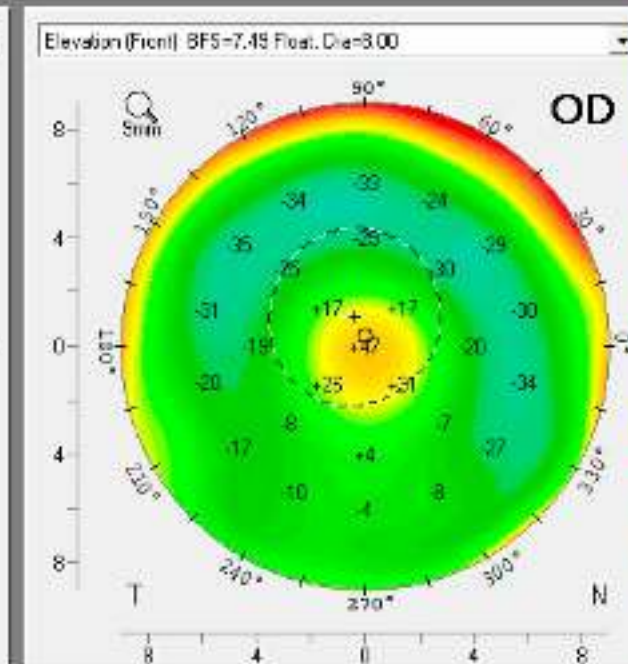
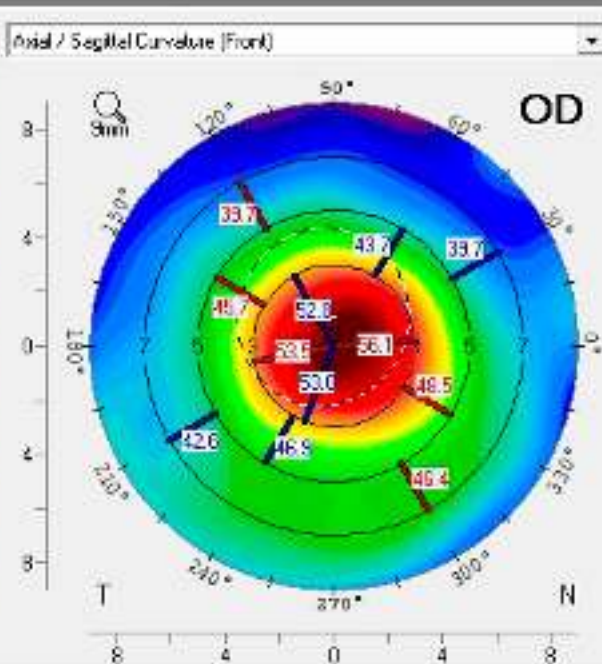
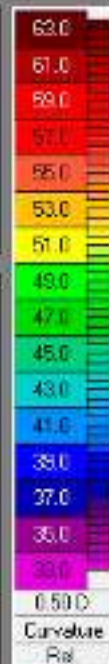
| | | | | |
|------------------|--------------|---------|--------|---------|
| Rf: | 6.25 mm | K1: | 54.0 D | |
| Rs: | 6.13 mm | K2: | 55.1 D | |
| Rm: | 6.19 mm | Kmc: | 54.5 D | |
| Q5 Data G | Axis (Irel): | 106.1 ° | Asig: | 1.1 D |
| Q-val: (8mm) | Rper: | 8.24 mm | Rmir: | 5.21 mm |

Cornea Back

| | | | | |
|--------------|--------------|---------|---------|---------|
| Rf: | 3.52 mm | K1: | -10.2 D | |
| Rs: | 3.85 mm | K2: | -10.4 D | |
| Rm: | 3.88 mm | Kmc: | -10.3 D | |
| Q5 OK | Axis (Irel): | 27.6 ° | Asig: | 0.2 D |
| Q-val: (8mm) | Rper: | 6.70 mm | Rmir: | 2.85 mm |

| | | | | | | | |
|------------------|---|--------|--------|-------|-------|-------|-------|
| Pupil Center: | + | Pachy: | 286 μm | x(mm) | 0.20 | y(mm) | +0.54 |
| Pachy Vertex N.: | . | | 275 μm | 0.00 | 0.00 | | |
| Thinnest Local.: | ○ | | 276 μm | 0.00 | +0.19 | | |
| K Max (Front): | | | 64.8 D | +0.12 | +0.12 | | |

| | | | |
|--------------------|----------------------|------------|---------|
| Cornea Volume: | 57.4 mm ³ | HW/TW: | 10.9 mm |
| Chamber Volume: | 169 mm ³ | Angle: | 35.1 ° |
| A.C. Depth (Int.): | 3.48 mm | Pupil Dia: | 3.22 mm |
| Enter IDP | | Lens Th.: | |



OCULUS Corvis® ST - Biomechanical/Tomographic Assessment (ARV)

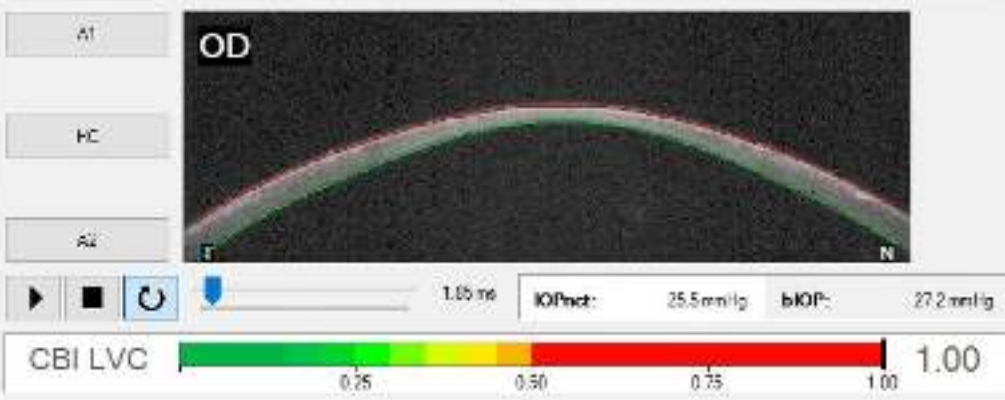
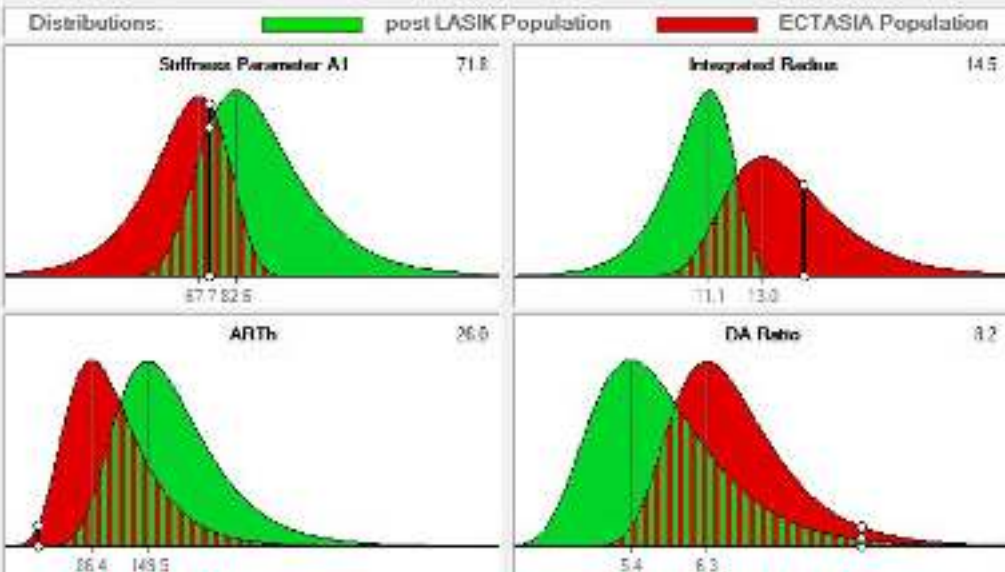
1.72704

Patient: [Redacted] Export Settings External software

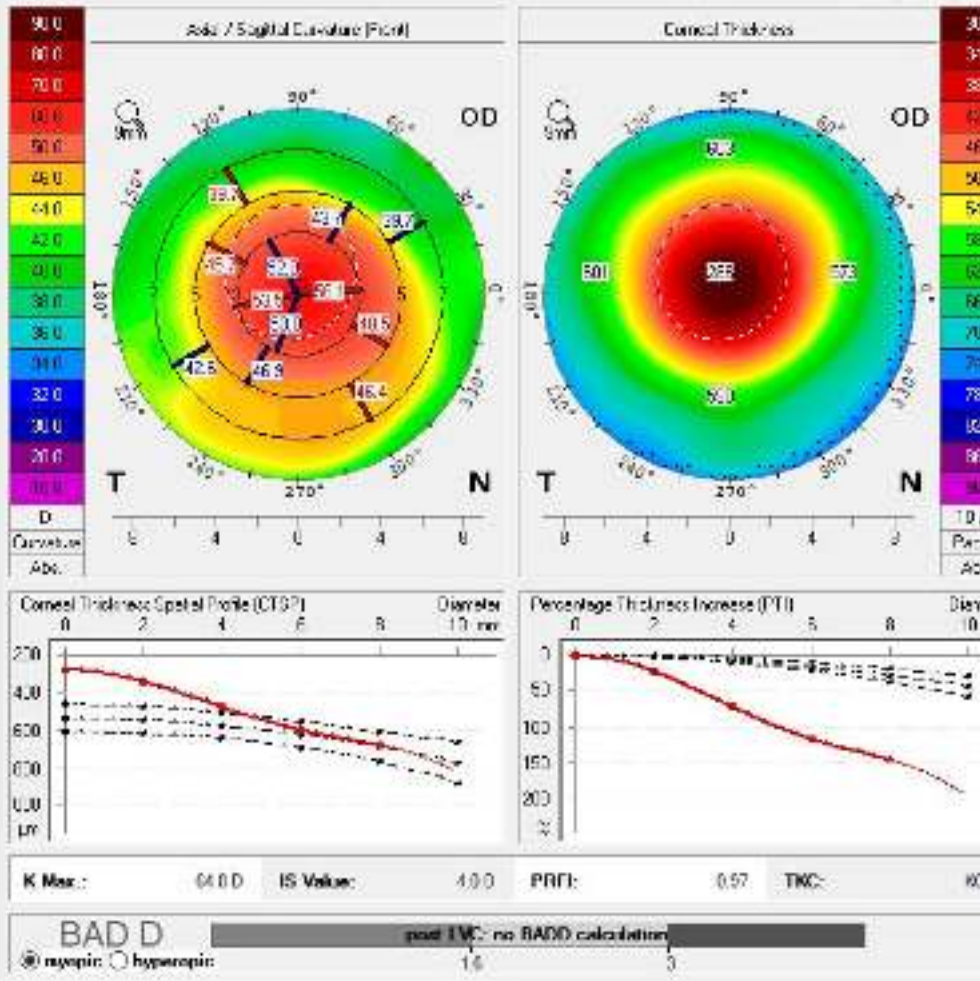
E-Mail AVI JGG

Name: [Redacted] ID: PostLVC Ectasia Date of birth: 24.12.1974 Age: 49
 Exam Date: 16.12.2024 Time: 11:04:59 Eye: Right (OD) Exam Date: 15.12.2024 Time: 10:52:29 Eye: Right (OD)
 Info: OS: Alignment Info: OS: Data Gaps!

Corvis ST - Biomechanical Assessment



Pentacam - Tomographic Assessment



Reference: Enrico Global database Treatment: [Redacted]

TBI █ post LVC: no TBI calculation

Oculus Optikgeräte GmbH
Münchholzhäuser Str. 29

35582 Wetzlar

Tel: (0641) 20 05-0
Fax: (0641) 20 05-255

www.oculus.de



EOS
EGYPTIA

OCULUS - PENTACAM 4 Maps Selectable

1.30:04

Last Name: XXXXXXXXXX
 First Name: XXXXXXXXXX
 ID: Post LVC Eclase
 Date of Birth: 12/24/1974 Eye: Left
 Exam Date: 12/16/2024 Time: 10:54:11
 Exam Info:

Cornea Front

| | | | |
|--------------|---------|--------------|---------|
| Rf: | 0.62 mm | K1: | 39.1 D |
| Fs: | 0.46 mm | K2: | 39.9 D |
| Rm: | 0.54 mm | Kmc: | 39.5 D |
| Axis (ell): | 11.1° | Axis (ell): | 0.8 D |
| Q-val: (8mm) | 0.52 | Rper: | 7.94 mm |
| | | Rmir: | 7.15 mm |

OS OK

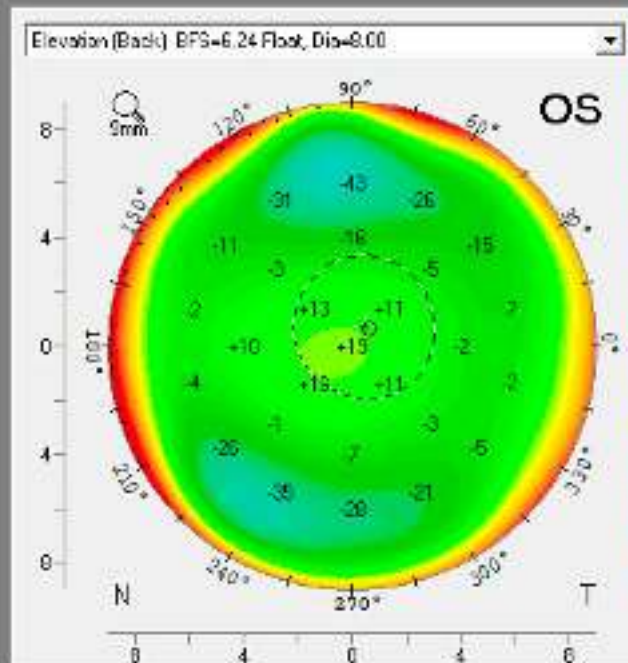
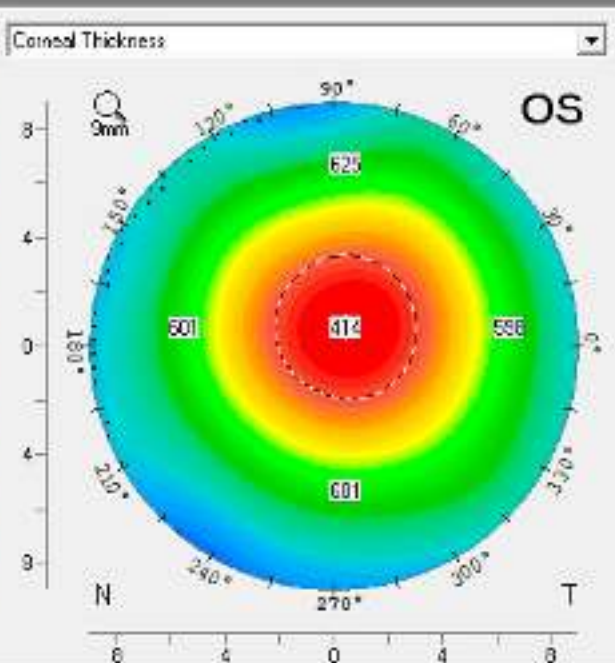
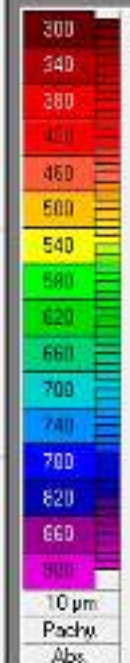
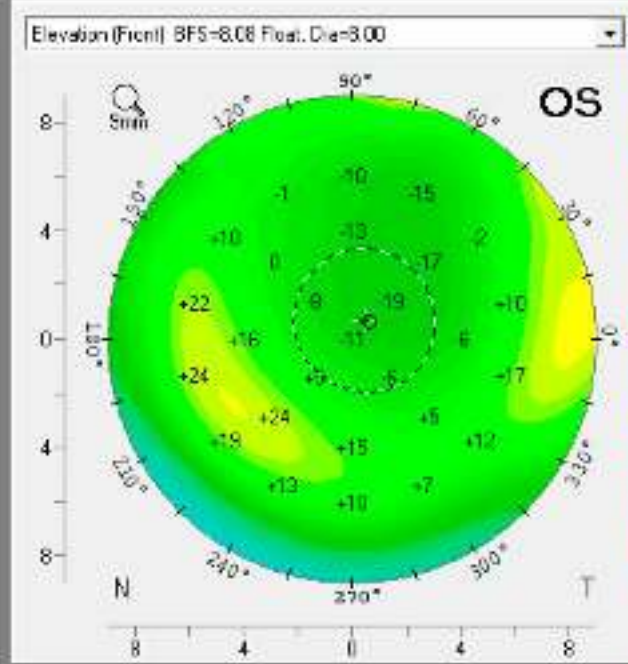
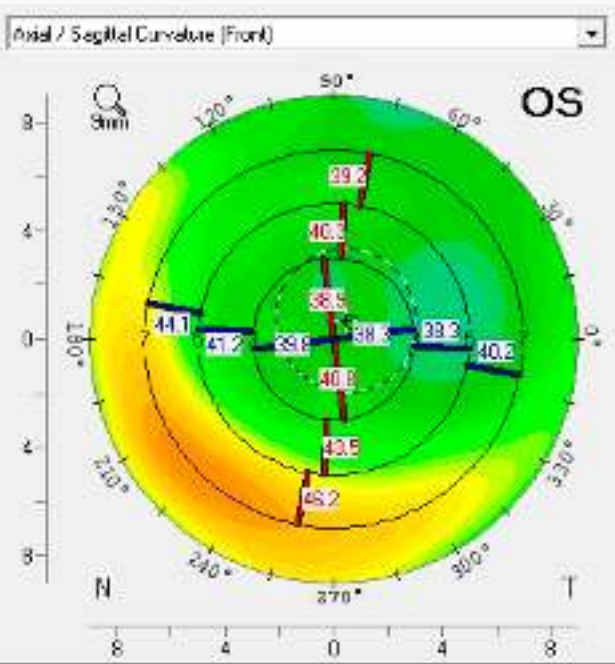
Cornea Back

| | | | |
|--------------|---------|--------------|---------|
| Rf: | 5.58 mm | K1: | -6.7 D |
| Fs: | 5.74 mm | K2: | -7.0 D |
| Rm: | 5.66 mm | Kmc: | -6.8 D |
| Axis (ell): | 3.7° | Axis (ell): | 0.3 D |
| Q-val: (8mm) | -0.86 | Rper: | 5.81 mm |
| | | Rmir: | 5.69 mm |

OS OK

| | | | | | |
|------------------|----------|-------|-------|-------|-------|
| Pupil Center: | + 414 µm | x(mm) | +0.24 | y(mm) | +0.35 |
| Pachy Vertex N.: | 415 µm | x(mm) | 0.00 | y(mm) | 0.00 |
| Thinnest Local.: | 414 µm | x(mm) | -0.31 | y(mm) | +0.31 |
| K Max (Front): | 47.2 D | x(mm) | -2.52 | y(mm) | -2.45 |

| | | | |
|-----------------------|----------------------|------------|---------|
| Cornea Volume: | 57.1 mm ³ | HW/TW: | 11.0 mm |
| Chamber Volume: | 199 mm ³ | Angle: | 43.9° |
| A.C. Depth (Int.): | 3.29 mm | Pupil Dia: | 2.62 mm |
| Enter IDP / ICPT Sum: | | Lens Th.: | |



OCULUS Corvis® ST - Biomechanical/Tomographic Assessment (ARV)

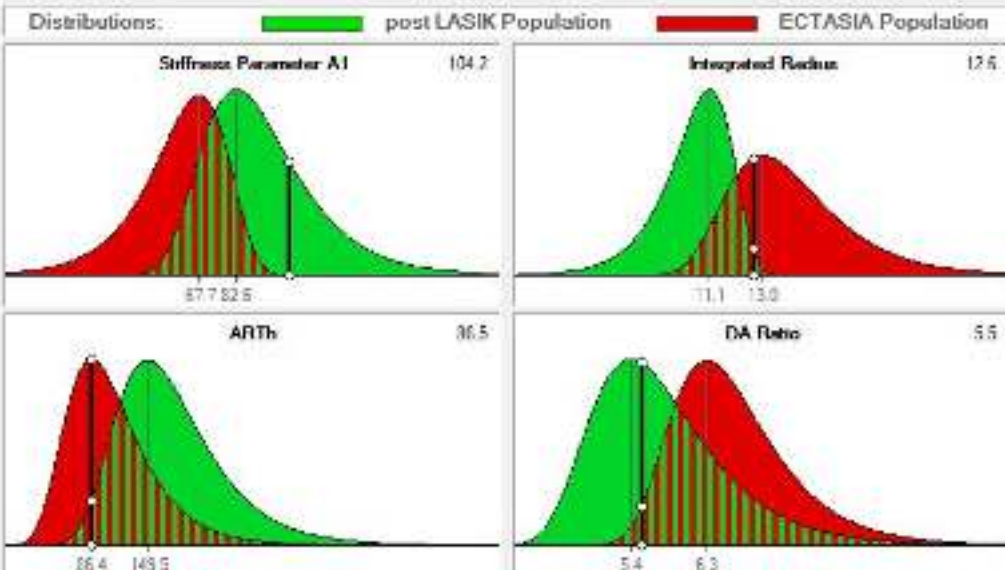
1.72704

Patient: Examination: Display: Exam: Settings: External software

E-Mail: AVI: JGG

Name: [REDACTED] ID: PostLVC Ectasia Date of birth: 24.12.1974 Age: 49
 Exam. Date: [REDACTED] Time: 10:58:06 Eye: Left (OS) Exam. Date: 15.12.2024 Time: 10:54:11 Eye: Left (OS)
 Info: OS: OK Info: OS: OK

Corvis ST - Biomechanical Assessment

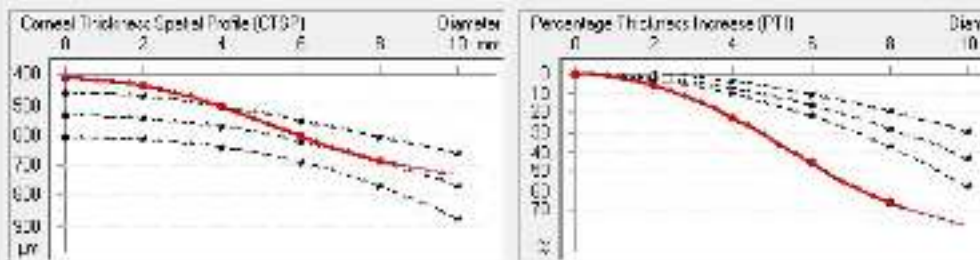
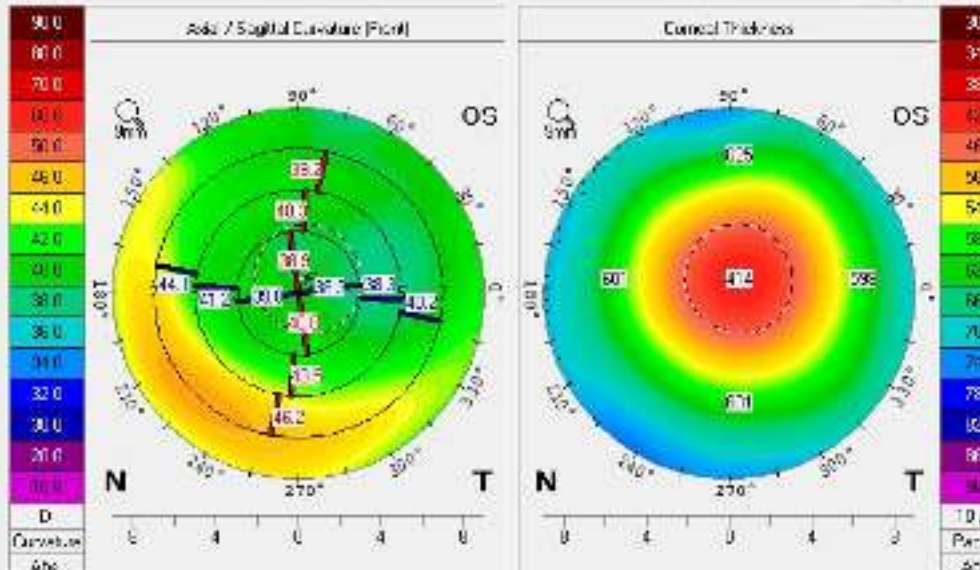


▶ ■ ↻ 6.70 ms IOPact: 17.5 mmHg bIOP: 19.0 mmHg

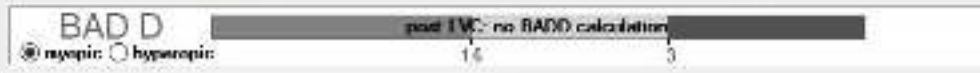


Referenc: Ethnicity: Global database Treatment: [REDACTED] TBI: [REDACTED] post LVC: no TBI calculation

Pentacam - Tomographic Assessment



K Max.: 47.2 D IS Value: 4.10 PRFI: 0.73 TMC: Post Corneal Surger



EOS
EGYPTIA

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35582 Wetzlar

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Fax: (0641) 20 05-255

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VAE

EOS 2025

EGYPTIAN OPHTHALMOLOGICAL SOCIETY

OCULUS - PENTACAM 4 Maps Selectable

1.2510

Last Name: [REDACTED]
 First Name: [REDACTED]
 ID: [REDACTED]
 Date of Birth: 04/30/1988 Eye: Right
 Exam Date: 05/15/2023 Time: 12:00:03
 Exam Info:

Cornea Front

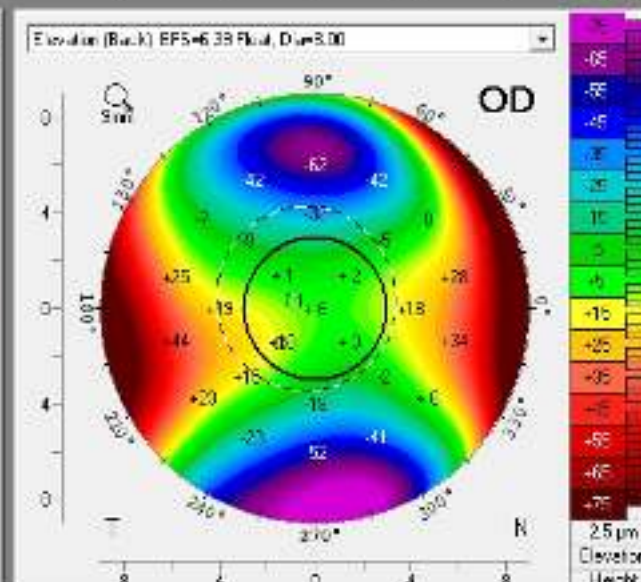
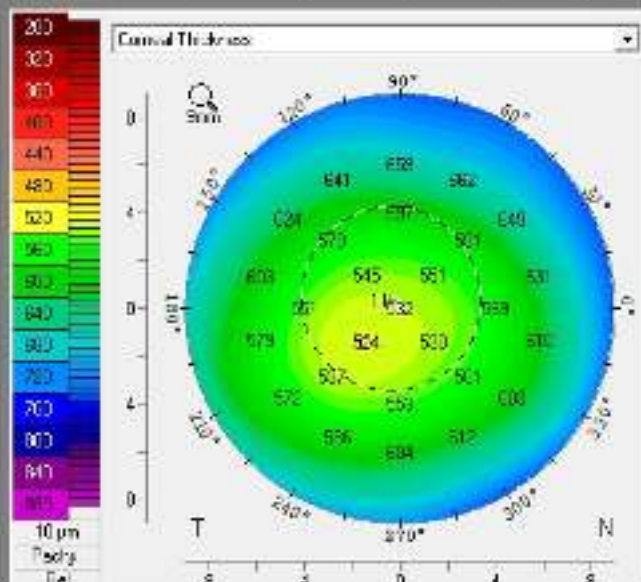
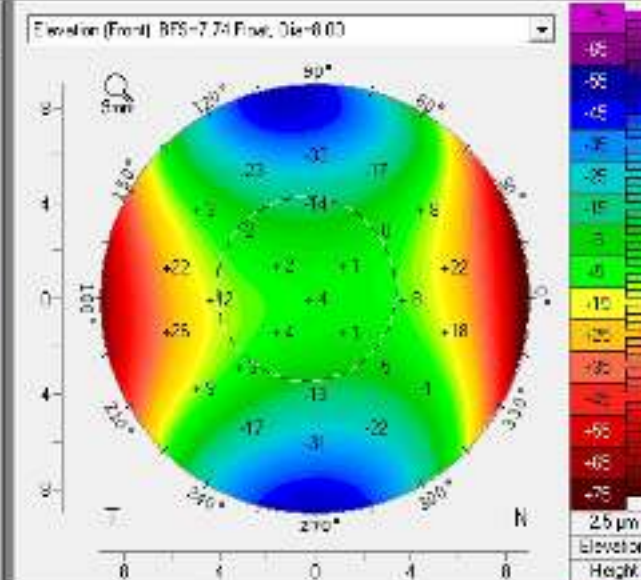
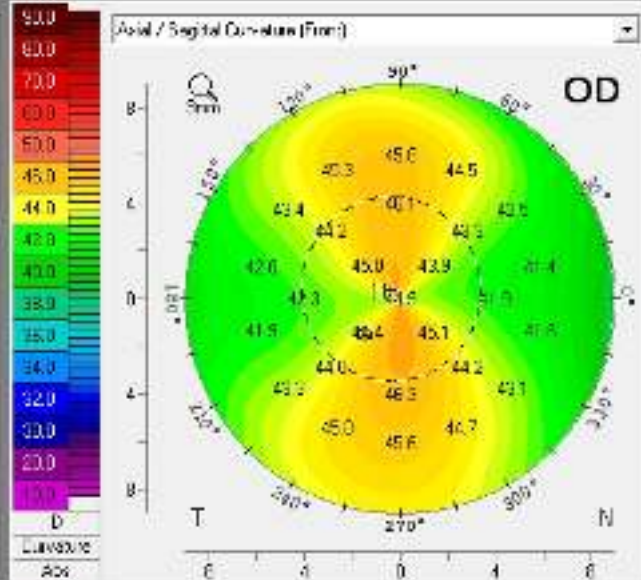
| | | | |
|--------------|---------|-----------|---------|
| RC: | 7.96 mm | K1: | 42.5 D |
| RI: | 7.27 mm | K2: | 46.4 D |
| Rmx: | 7.31 mm | Kmv: | 44.4 D |
| AS: | OK | Axis (H): | 5.1° |
| AS (V): | OK | Axis (V): | 3.9 D |
| Q-val (50°): | -0.96 | Rcor: | 7.39 mm |
| | | Rmin: | 7.19 mm |

Cornea Back

| | | | |
|--------------|---------|-----------|---------|
| RC: | 5.38 mm | K1: | -5.0 D |
| RI: | 5.31 mm | K2: | -5.9 D |
| Rmx: | 5.26 mm | Kmv: | -5.4 D |
| AS: | OK | Axis (H): | 0.0° |
| AS (V): | OK | Axis (V): | 0.9 D |
| Q-val (50°): | -0.36 | Rcor: | 5.58 mm |
| | | Rmin: | 5.75 mm |

| | | | | | |
|------------------|----------|------|-------|------|-------|
| Pupil Center: | + 334 μm | (mm) | 0.19 | (mm) | +0.20 |
| Pupil Area N: | 537 μm | (mm) | 0.00 | (mm) | 0.00 |
| Thinnest Locat.: | 524 μm | (mm) | -0.73 | (mm) | -0.73 |
| Th. Map (Front): | 46.9 D | (mm) | +0.07 | (mm) | -0.59 |

| | | | |
|-----------------------|----------------------|------------|---------|
| Cornea Volume: | 59.3 mm ³ | HW/Th: | 12.0 mm |
| Chamber Volume: | 100 mm ³ | Angle: | 36.7° |
| A-C Depth (mic): | 3.11 mm | Pupil Dia: | 3.00 mm |
| Enter IOP (IBP/Sunt): | -0.9 mmHg | Lens Th: | |



OCULUS - PENTACAM 4 Maps Selectable

1.2515

Lead Name: XXXXXXXXXX
 First Name: XXXXXXXXXX
 ID: XXXXXXXXXX
 Date of Birth: 04/30/1996 Eye: Left
 Exam Date: 06/15/2023 Inst: 0.5323
 Exam Info:

Cornea Front

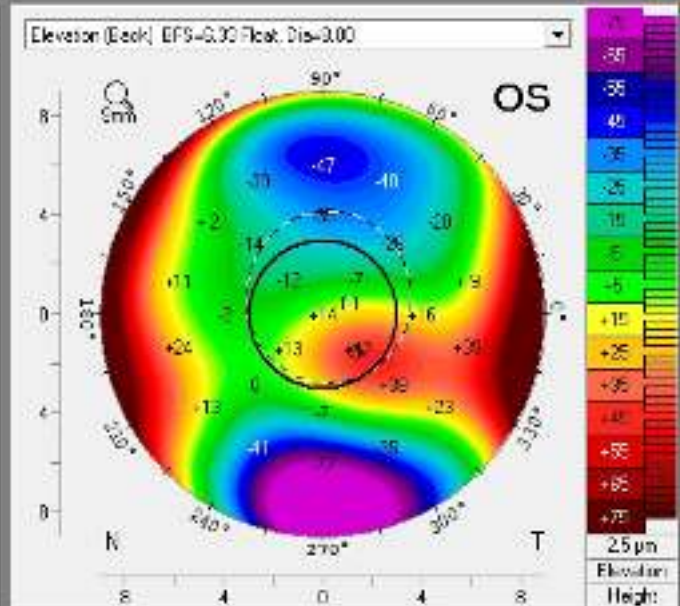
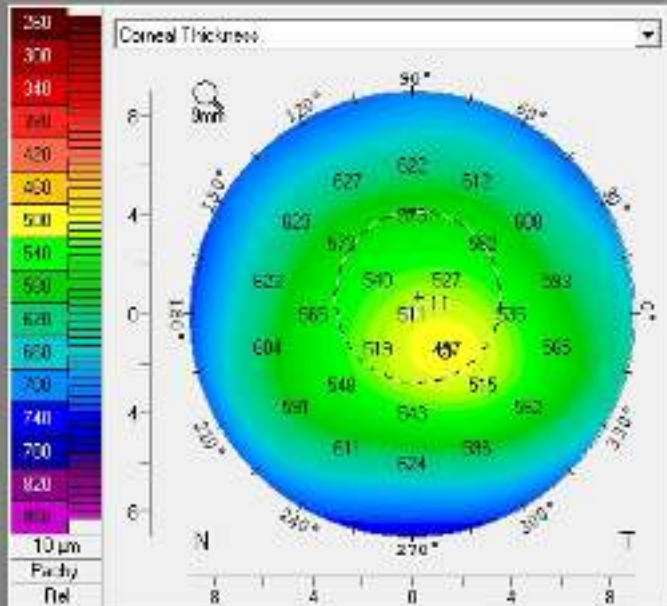
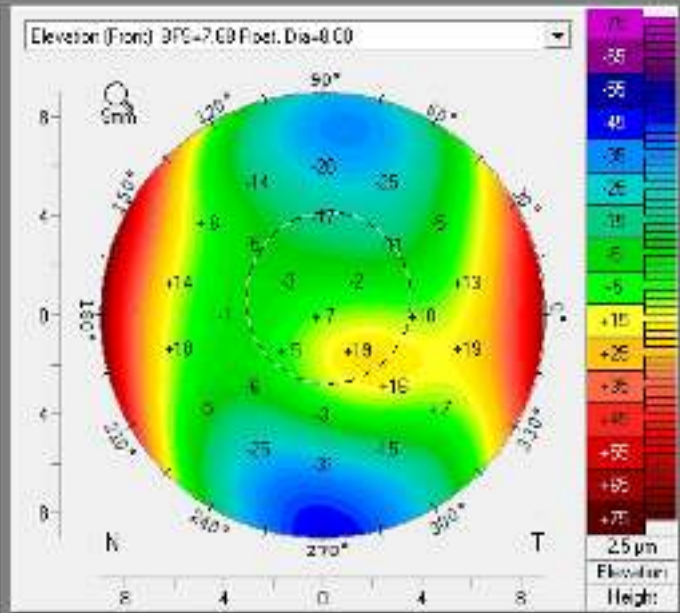
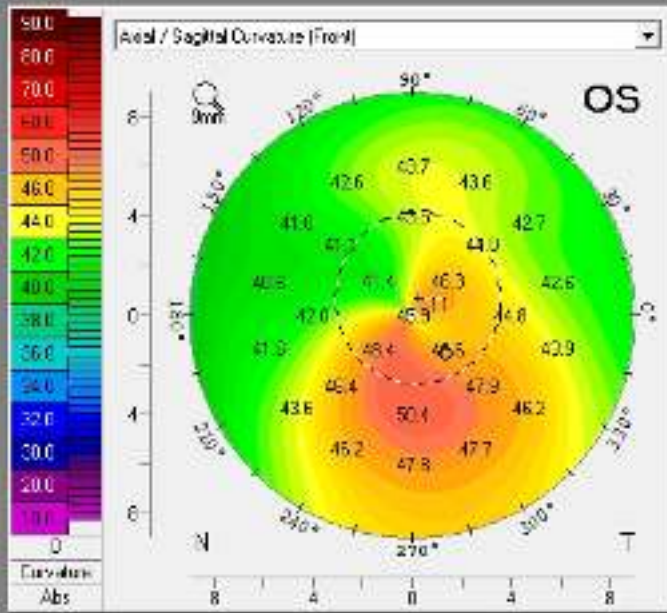
| | | | |
|------------|---------|-------------|---------|
| R1 | 7.73 mm | K1 | 43.7 D |
| R2 | 7.15 mm | K2 | 46.0 D |
| Rm | 7.46 mm | Km | 45.0 D |
| QS: | OK | Asig (Itak) | 152.3° |
| Q-val (Q0) | -0.51 | Rpac | 7.95 mm |
| | | Rmin | 6.57 mm |

Cornea Back

| | | | |
|------------|---------|-------------|---------|
| R1 | 6.47 mm | K1 | -6.2 D |
| R2 | 5.90 mm | K2 | -6.9 D |
| Rm | 6.13 mm | Km | -6.5 D |
| QS: | OK | Asig (Itak) | 153.5° |
| Q-val (Q0) | -0.47 | Rpac | 6.71 mm |
| | | Rmin | 4.32 mm |

| | | | | | | |
|-----------------|---|--------|-------|-------|-------|-------|
| Pupil Center | r | 510 μm | x(mm) | +0.12 | y(mm) | +0.34 |
| Pachy Vertex N: | r | 511 μm | x(mm) | 0.00 | y(mm) | 0.00 |
| Thinned Vertex: | r | 497 μm | x(mm) | +0.68 | y(mm) | -0.75 |
| K Max (Front) | r | 50.6 D | x(mm) | 0.07 | y(mm) | -1.63 |

| | | | |
|-----------------------|----------------------|------------|---------|
| Cornea Volume: | 50.5 mm ³ | HFVTh: | 121 mm |
| Chamber Volume: | 203 mm ³ | Angle: | 381° |
| A. D. Depth (Itak): | 3.26 mm | Pupil Dia: | 3.95 mm |
| Enter IOP (IOP(Sun)): | -2.4 mmHg | Lens Th: | |

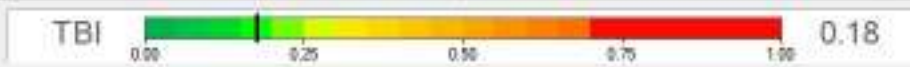
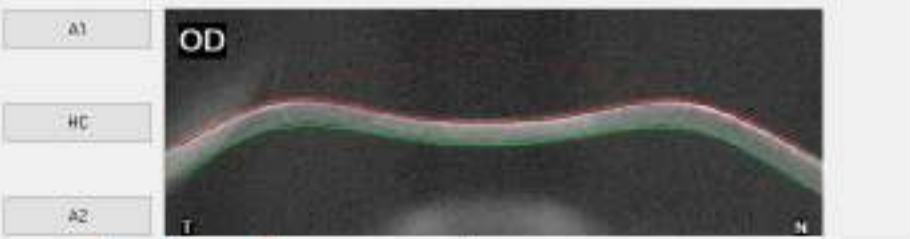
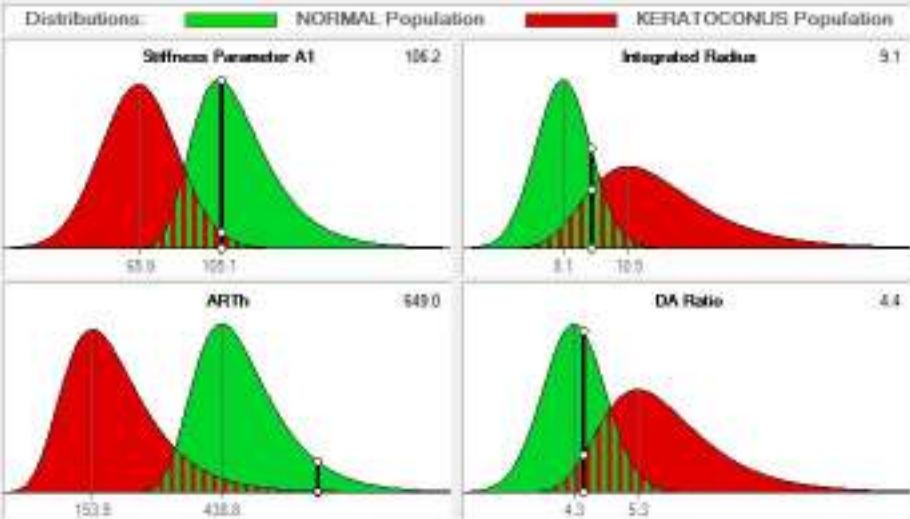


OCULUS Corvis® ST - Biomechanical/Tomographic Assessment (ARV)

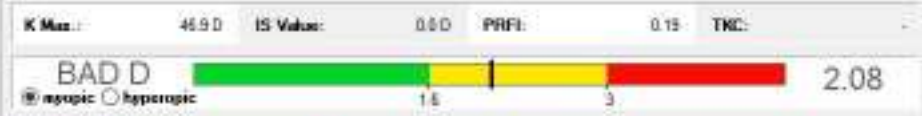
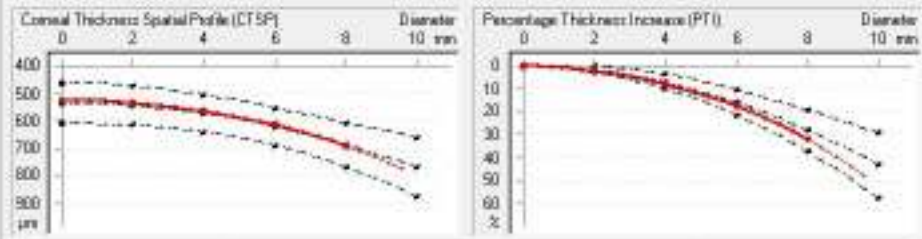
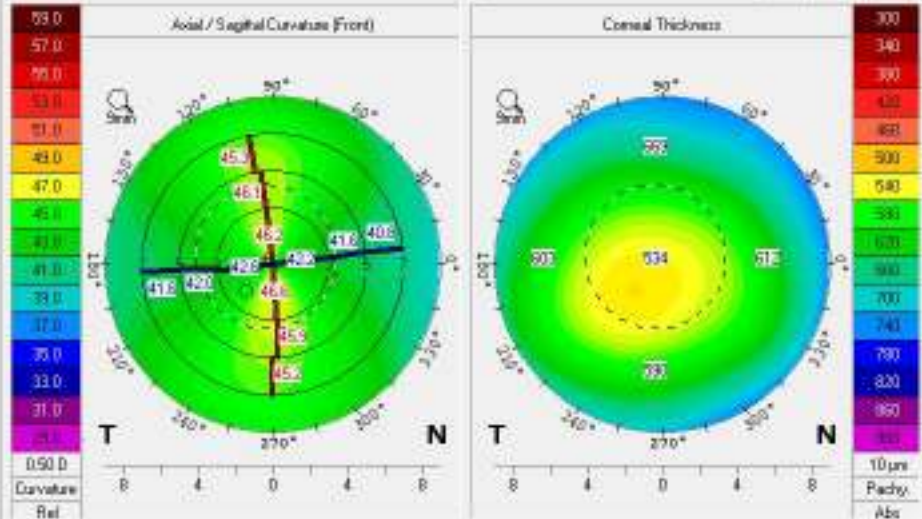
162503

Name: [REDACTED] ID: vae Date of birth: 30.04.1998 Age: 25
 Exam. Date: 15.05.2023 Time: 10:57:06 Eye: Right (OD) Exam. Date: 15.05.2023 Time: 12:00:03 Eye: Right (OD)
 Info: QS: OK Info: QS: OK

Corvis ST - Biomechanical Assessment



Pentacam - Tomographic Assessment



EOS 20
EGYPTIAN C

Oculus Optikgeräte GmbH
Münchholzhäuser Str. 29

35582 Wetzlar

Tel: (0641) 20 05-0
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www.oculus.de

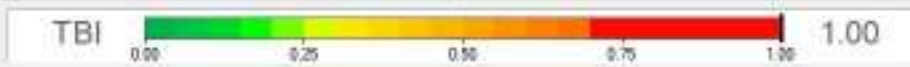
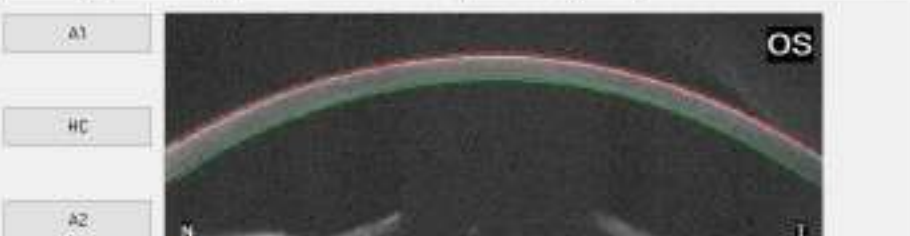
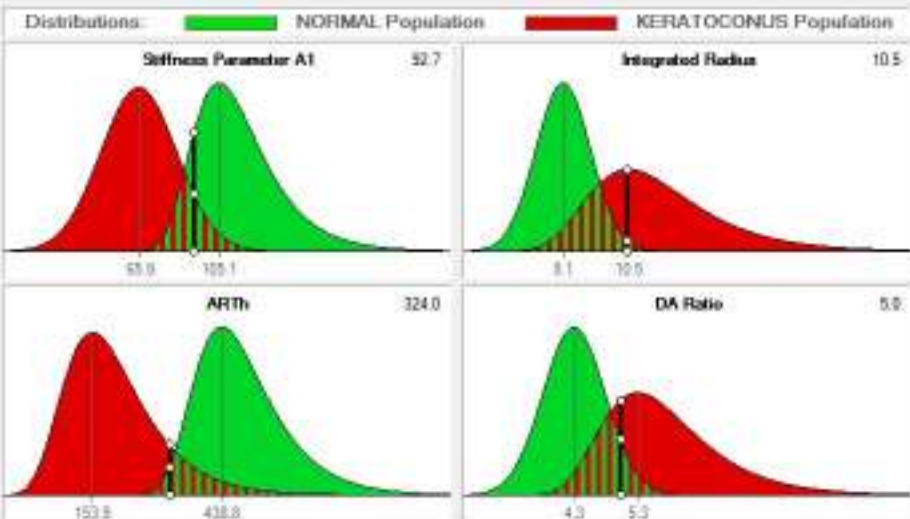


OCULUS Corvis® ST - Biomechanical/Tomographic Assessment (ARV)

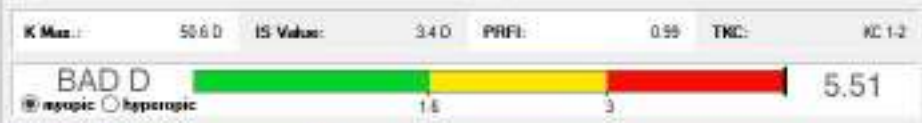
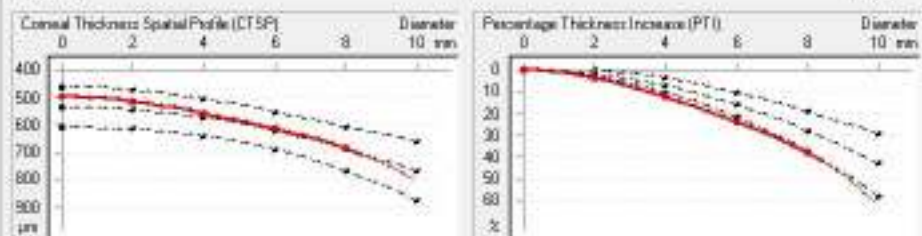
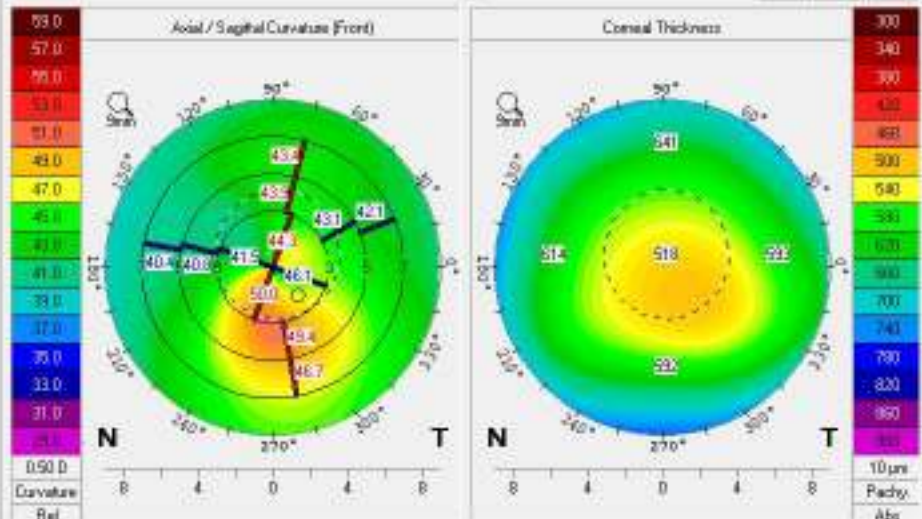
162503

Name: [REDACTED] ID: vae Date of birth: 30.04.1998 Age: 25
 Exam. Date: [REDACTED] Time: 10:56:53 Eye: Left (OS) Exam. Date: 15.05.2023 Time: 10:53:29 Eye: Left (OS)
 Info: [REDACTED] QS: OK Info: [REDACTED] QS: OK

Corvis ST - Biomechanical Assessment



Pentacam - Tomographic Assessment



EOS 20
EGYPTIAN C

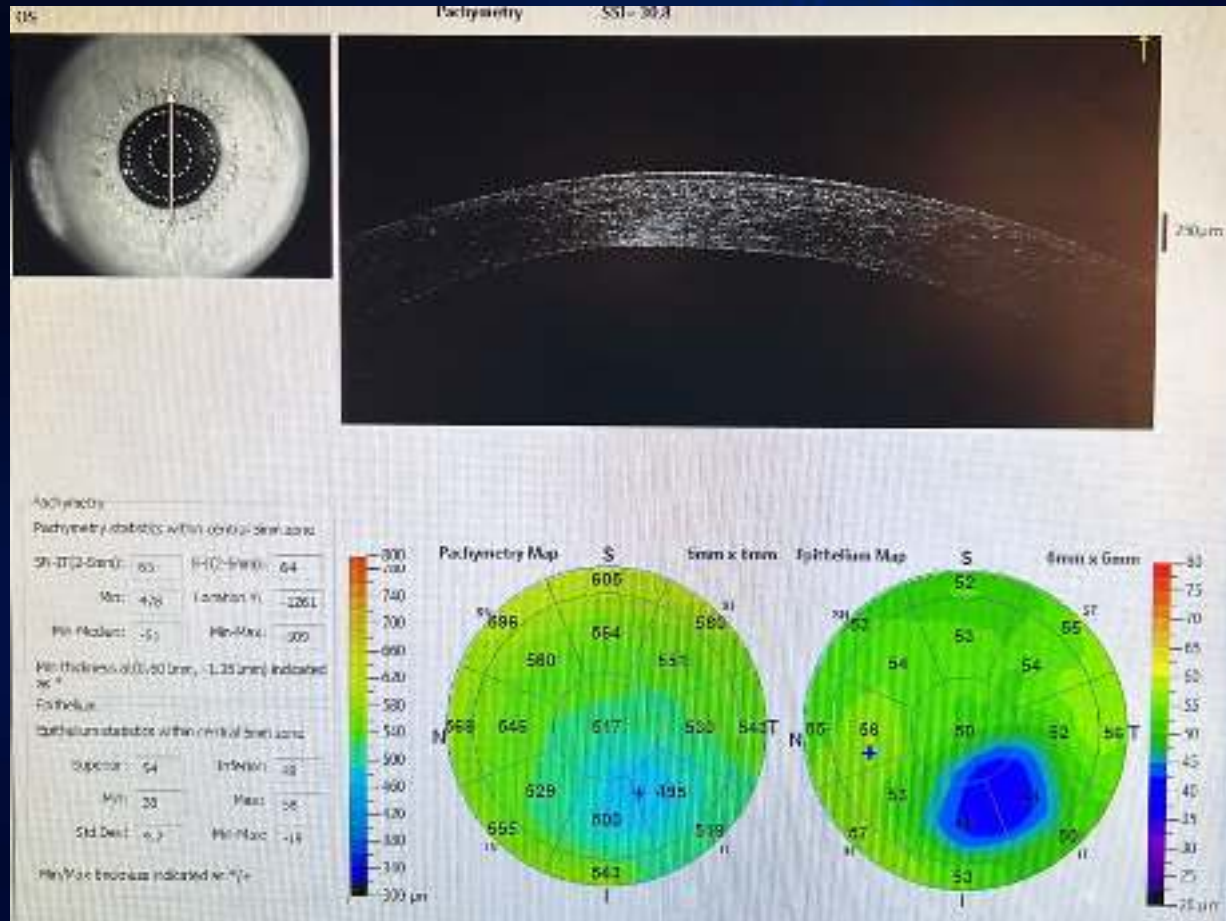
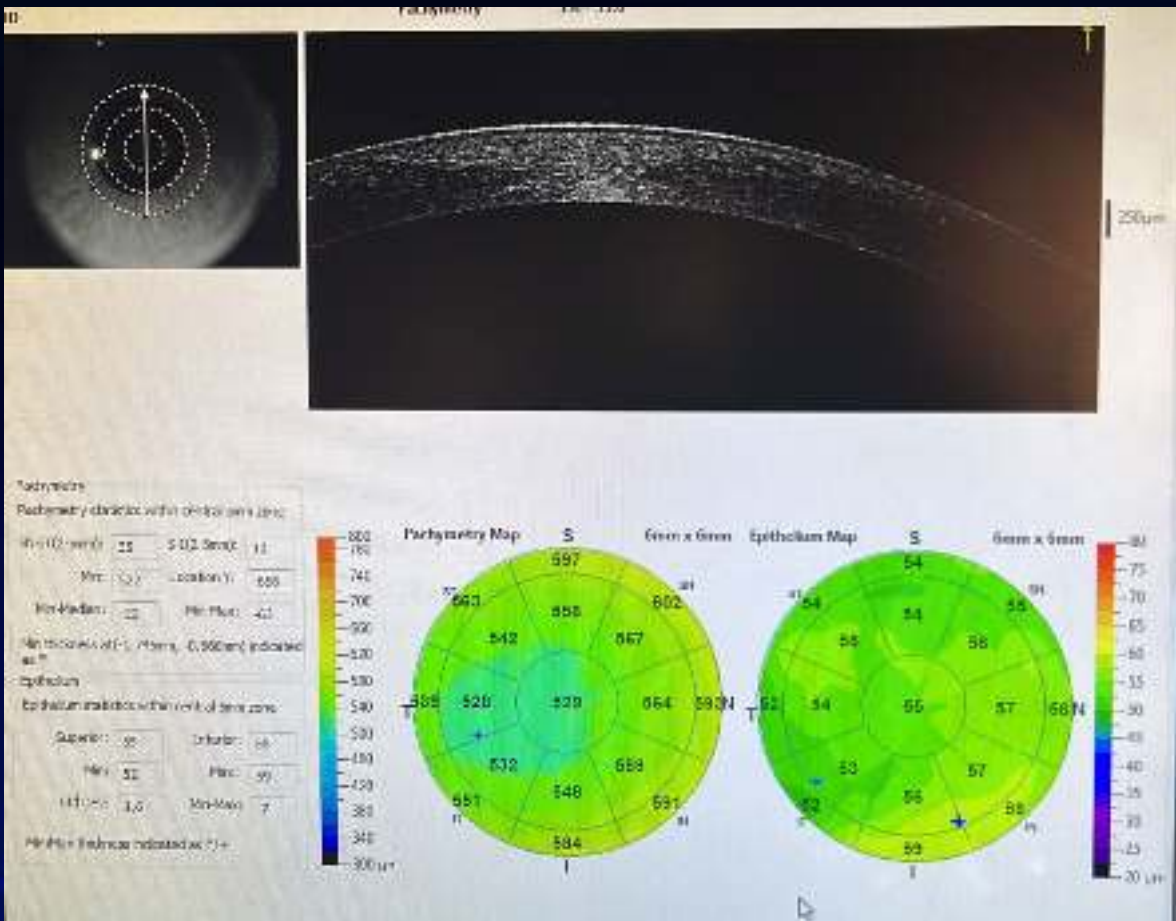
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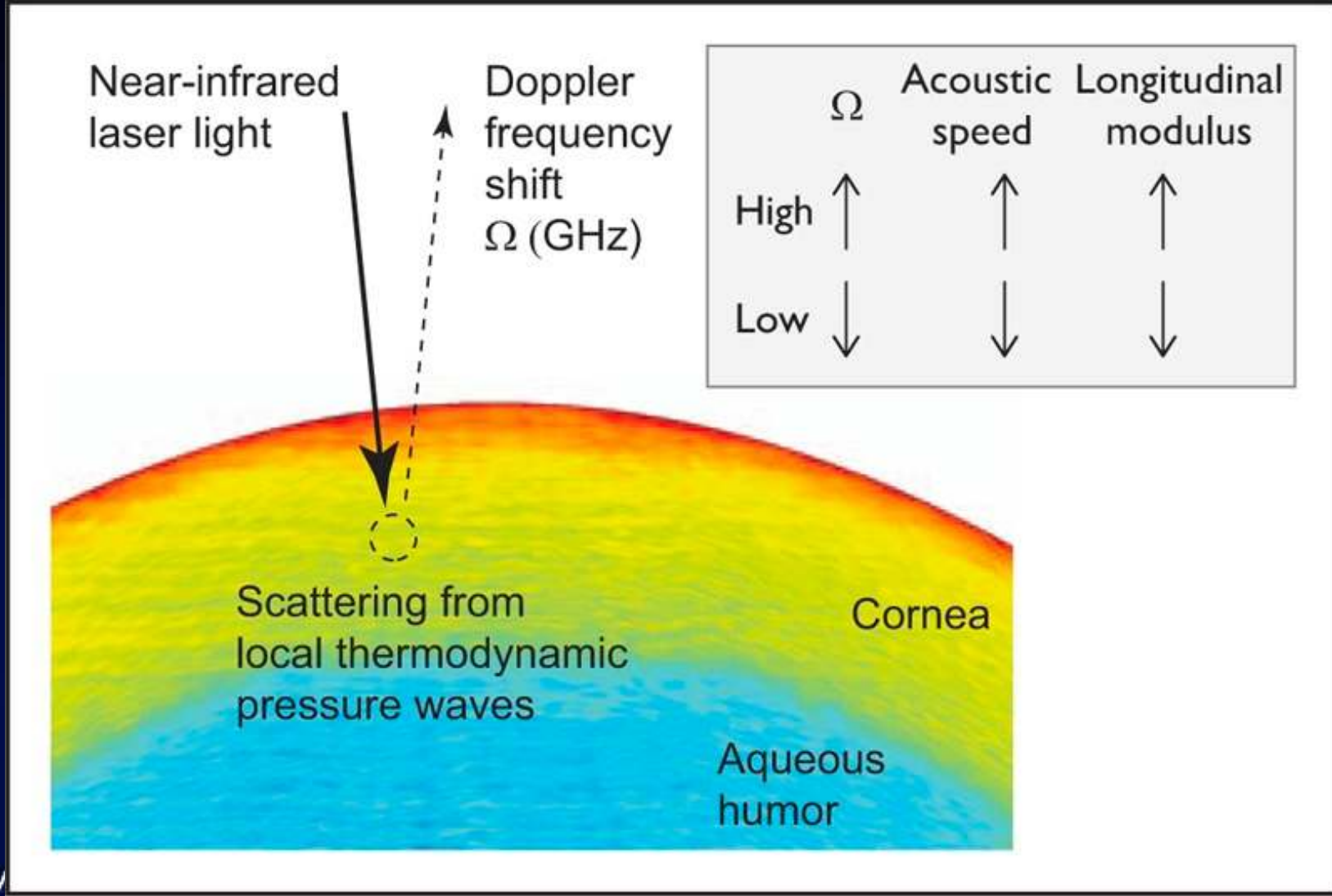
EGYPTIAN OPHTHALMOLOGICAL SOCIETY

Brillouin microscopy

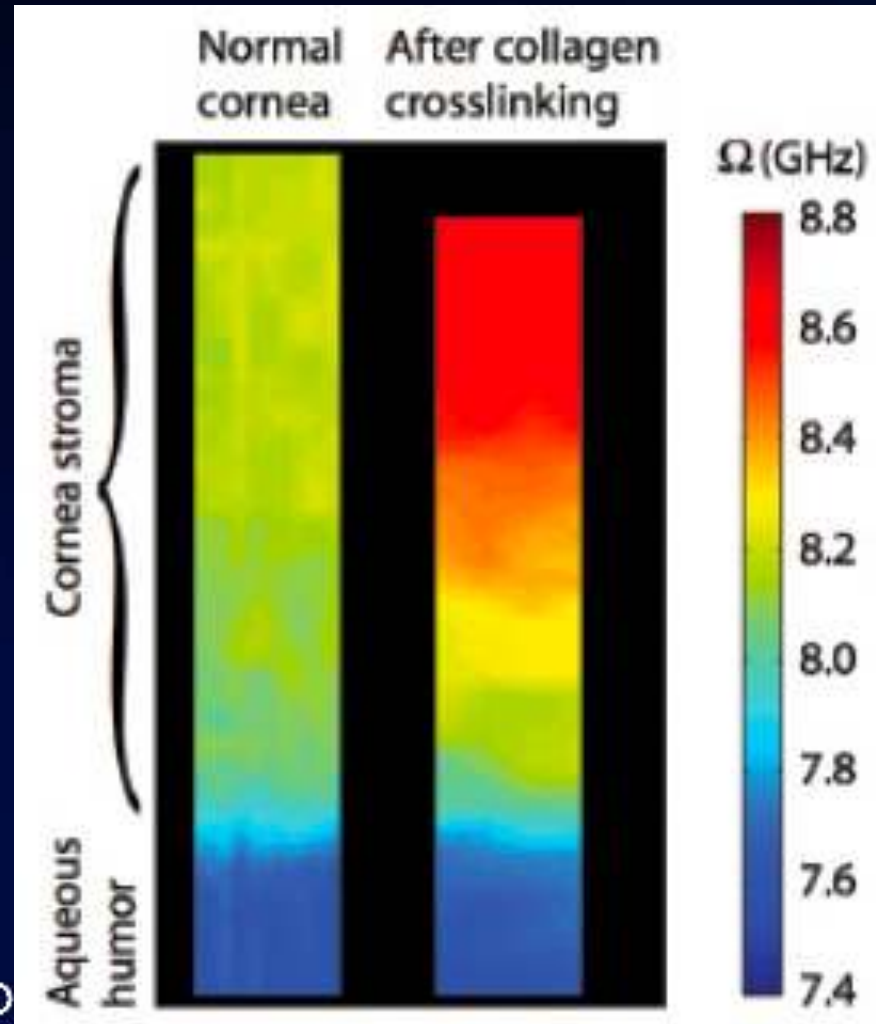
- Brillouin Optical Scanner System (BOSS)
- Based on a Brillouin microscopy technique that measures minute changes in the wavelength of back-scattered light produced by light directed and focused into the cornea
- The measured frequency shift, which is correlated to the material stiffness, will be used to determine cornea stiffness



The principle of Brillouin microscopy



CXL



EOS 2025

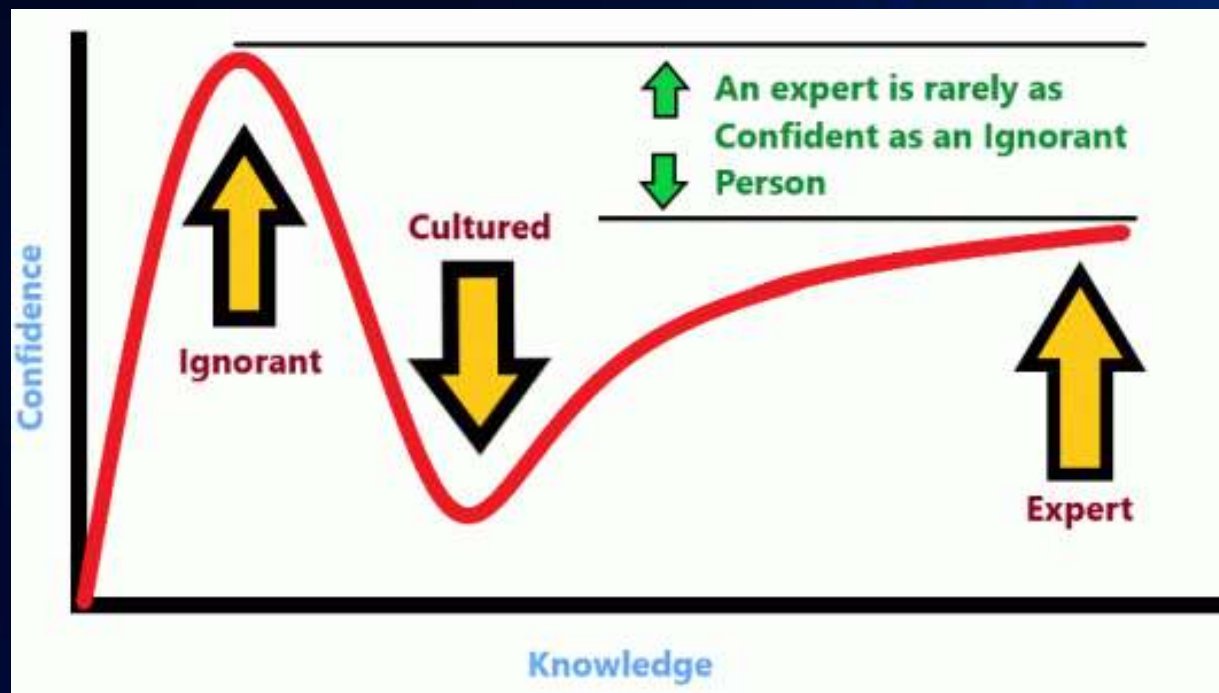
EGYPTIAN OPHTHALMOLOGICAL SOCIETY

Optical coherence elastography (OCE)

- Dynamic OCE is a clinically promising non-contact imaging technique that can provide measurements of corneal tissue stiffness directly in vivo.

Take Home Message

Dunning-Kruger effect



- The more knowledge you get, the better decision you can make

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Thank you

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