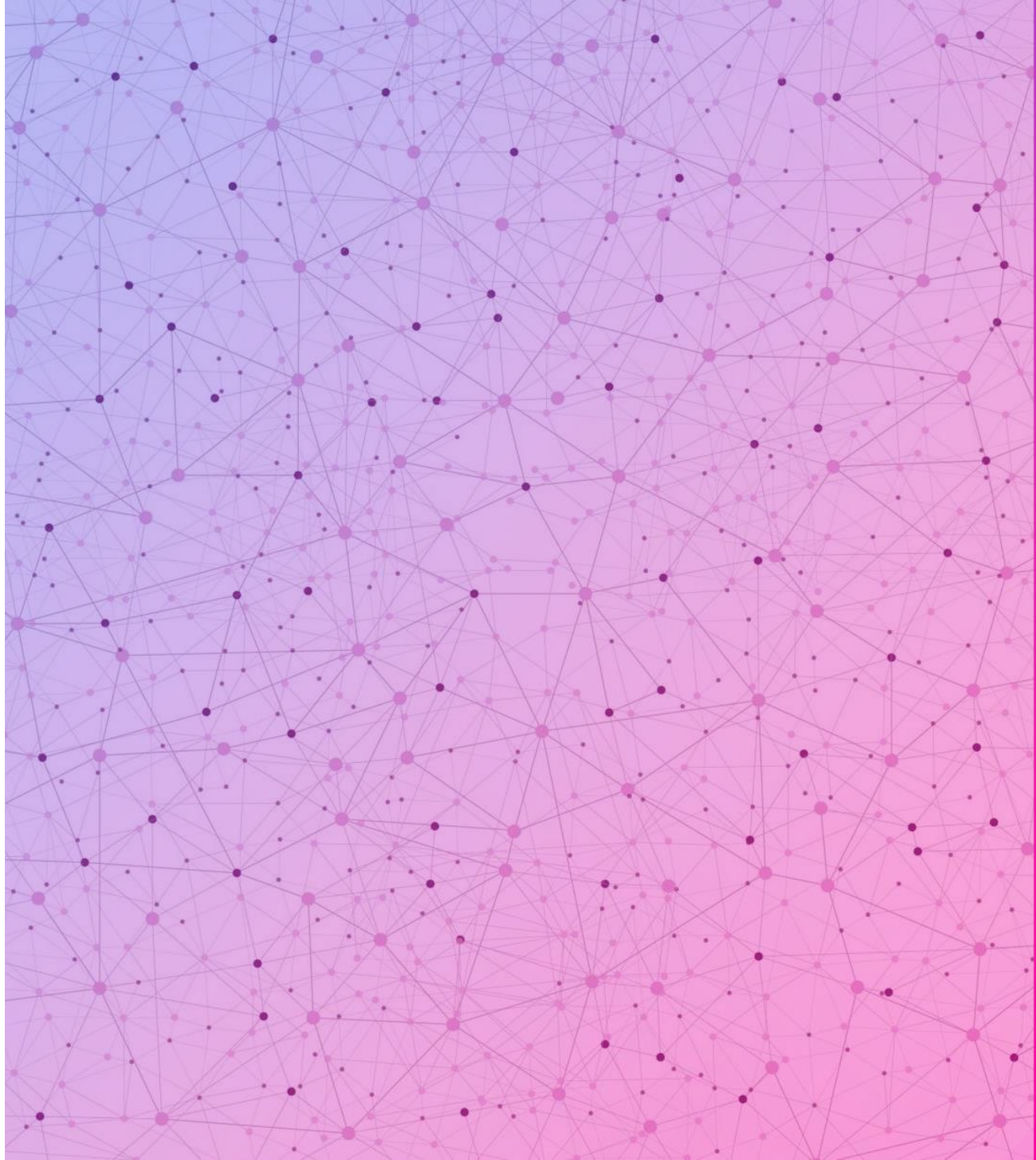
What Your Contact Lens Lab Wish You Knew

Nicole Edwards, NCLE-AC



Financial Disclosure

Manager of Consultation & Customer Service for Bausch + Lomb Specialty Vision Products

Key Elements

- Understand the important elements that are needed to efficiently and accurately design specialty contact lenses.

- S.O.A.P. Method
  - Subjective, Objective, Assessment, Plan
  - Creates an organized format to gather necessary information

Subjective

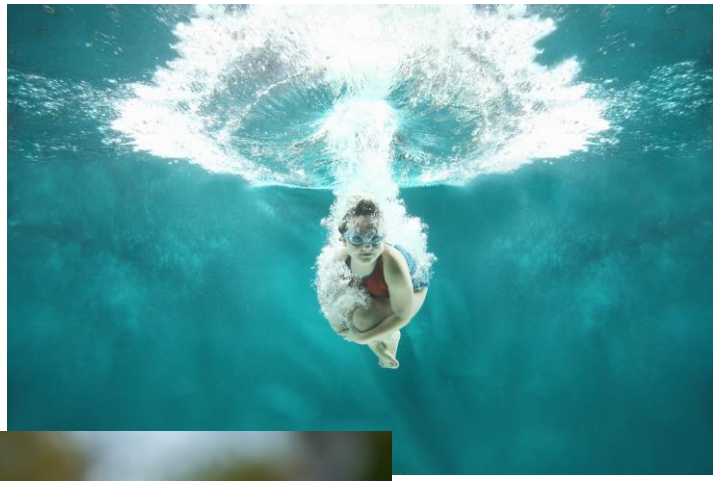
- What are subjective findings?
- Personalized diagnosis and treatment
  - Customize Prescriptions
  - Understanding Daily Impact
  - Addressing Visual Complaints
- Complementing objective tests
- Revealing Hidden Problems
- Verifying Visual Acuity

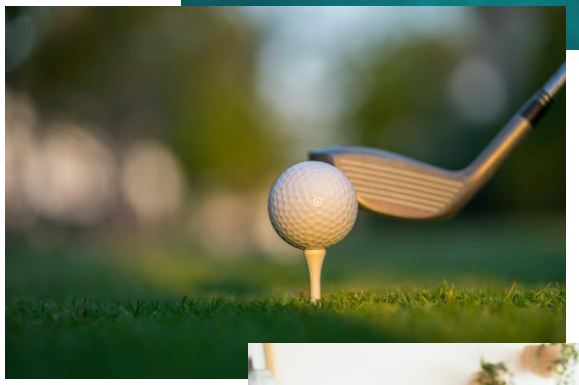
Patient age

- Does patient need a Multifocal?
- Is patient a child so are parents assisting with I&R?
- Depending on type of lens, is there a design change that can help the I&R process?
  - Smaller lens diameter?
  - Thicker lens edge?

Visual needs

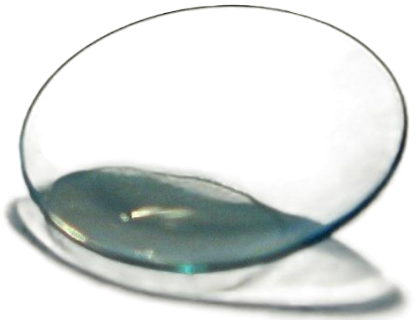
- Daily activities
- Occupation
- Computer usage and near vision needs?
- Do they drive a lot?
- Do they need good binocular vision?
- If a child, are they active in sports?
- Are they a swimmer?





History of contact lens wear

- What type of lenses are they wearing?
- Is patient open to being refit into new technology to help with lens comfort and/or vision?
  - For example, a patient that has worn corneal GP lenses for 20 years and considering being refit into scleral contact lens.
- Lens care could change with change in modality
- Wearing schedule can change
- New to lens wear?
- Considerations for lens diameter and lens handling
- Discuss adaptation period with the ECP for realistic expectations



If current lens wearer

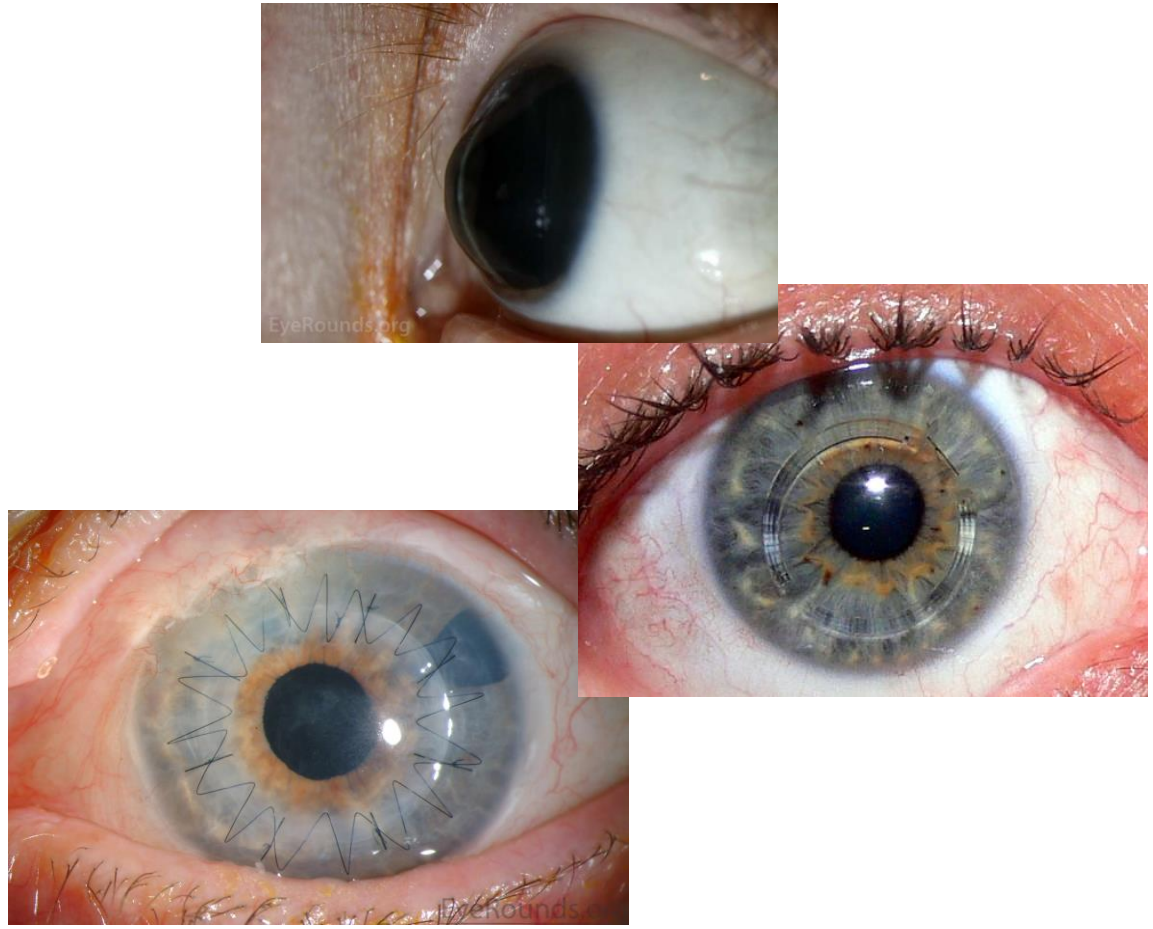
- Contact lens solution patient is using
- Lens comfort
- Issues with lens wear
- How long has lens been on the eye during the evaluation

Ocular surgical history

- Determine what type of lens to fit the patient with
- If history of trauma, this can affect how the lens fits on the conjunctiva due to change in shape of tissue
- If corneal scarring, this may limit BCVA with the contact lens
- If corneal transplant, need to ensure maximum oxygen to the cornea between the lens material and the contact lens fit

Ocular Diagnosis for Contact Lens Wear

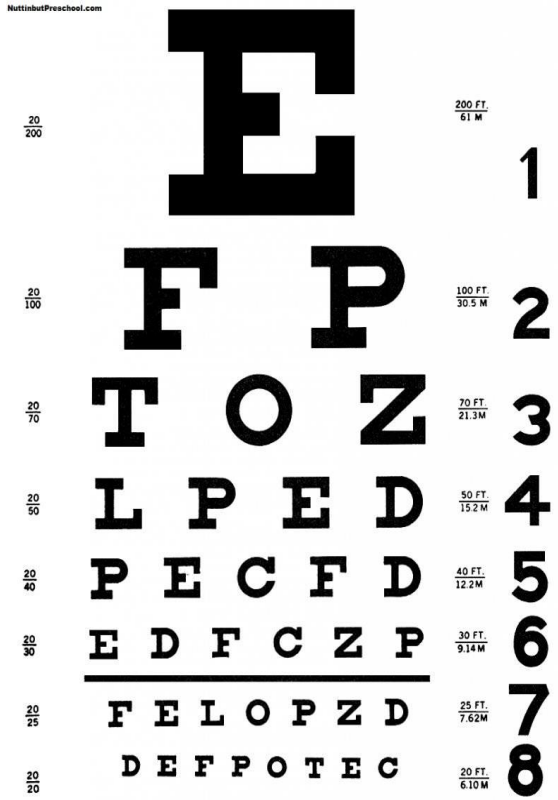
- What is the ocular pathology?
- What is the corneal shape?
  - For example, it is important to know if patient has Keratoconus to ensure proper clearance over the apex of the cornea during lens wear



Objective

What are objective findings?

- Visual acuity with lenses (distance and near)
- Lens fit: centration, movement, coverage and stability
- Lens condition: deposits, tears, warpage, edge integrity
- Slit lamp exam: conjunctiva, cornea (staining, neovascularization), tear film quality
- Over-refraction results
- Keratometry/topography changes (if relevant)



Best Corrected VA

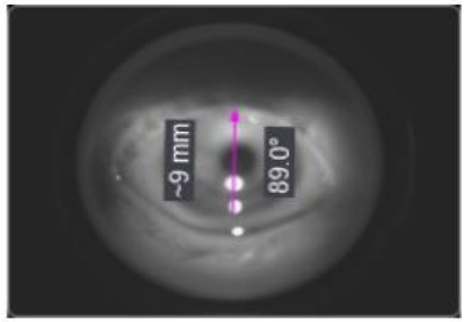
- What is the expected BCVA
- Does this align with the patient's expectations?
- Pinhole- if not able to get to 20/30 or better

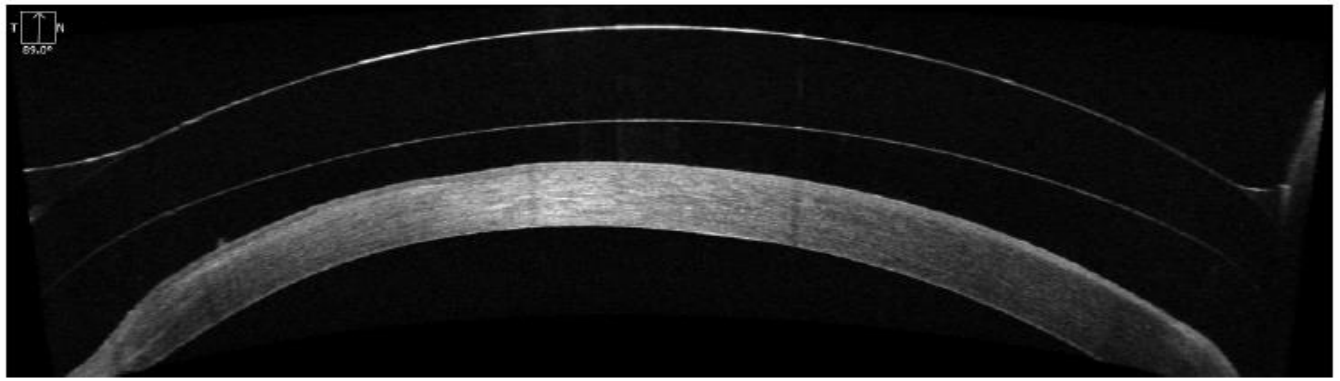
Without Pinhole

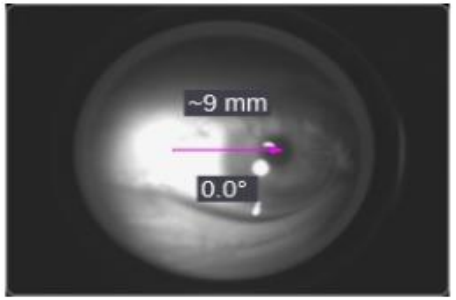
With Pinhole

OCT and Slit Lamp Images

- How long was lens on eye when the image was taken?
- Align the scan with the flat/steep rotation
- Proper labeling of the images
- Clear images
- Slit lamp
  - make sure the light does not wash out the image


~9 mm
89.0°


T
N
89.0°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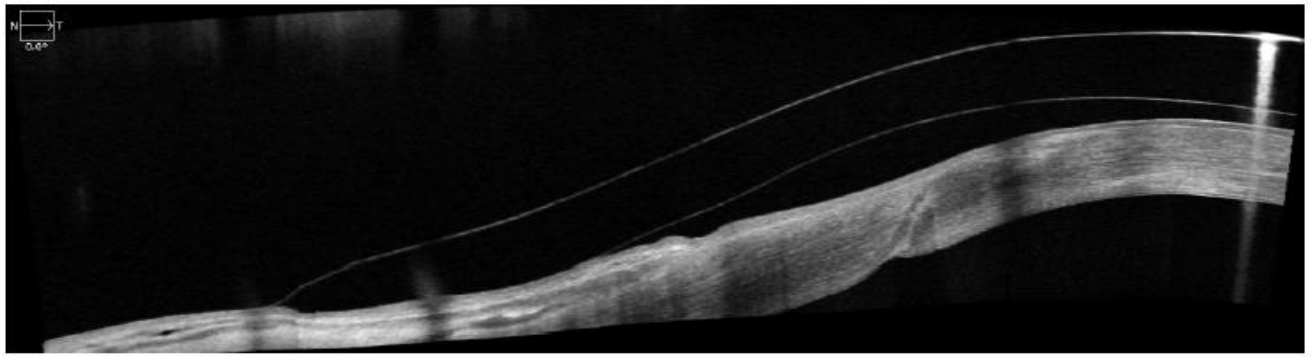
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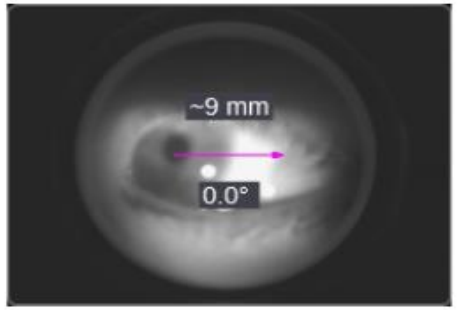
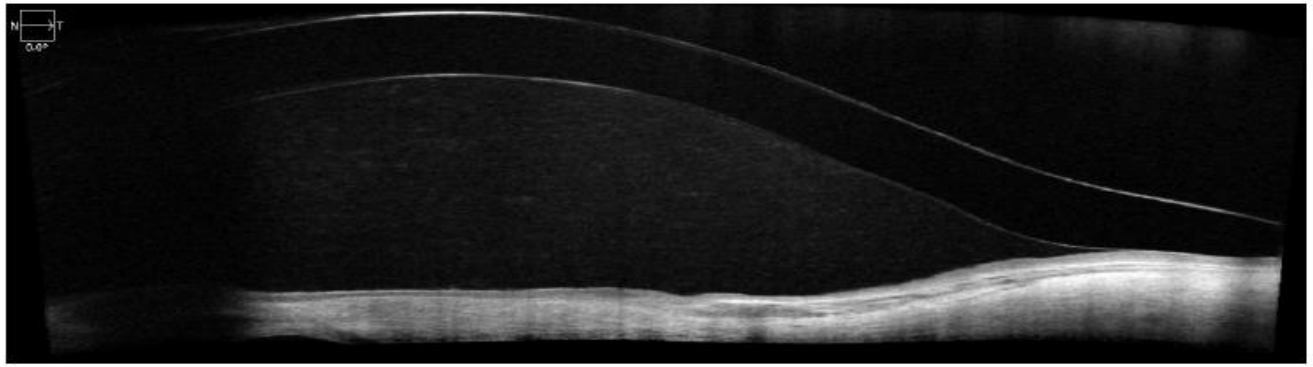
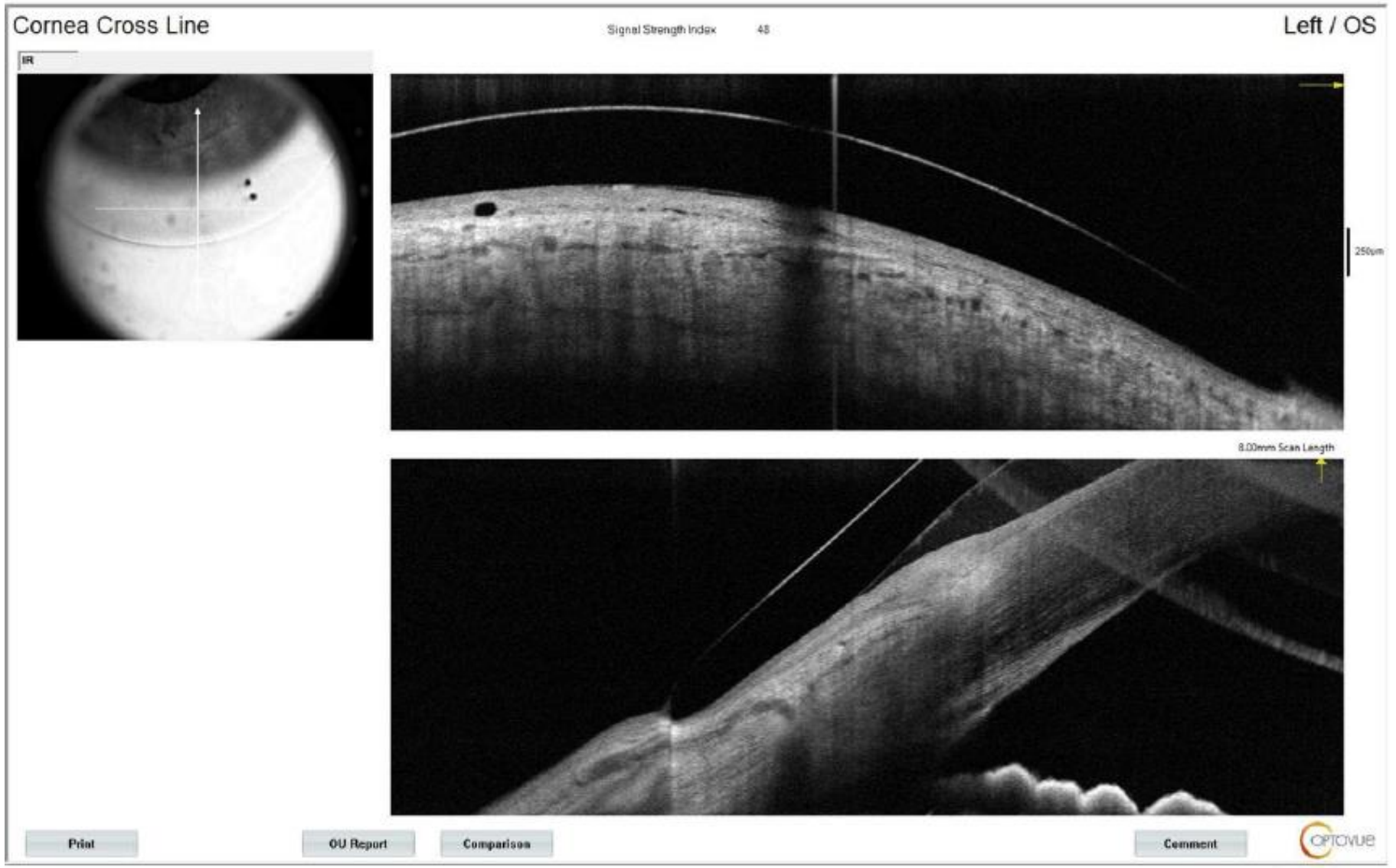
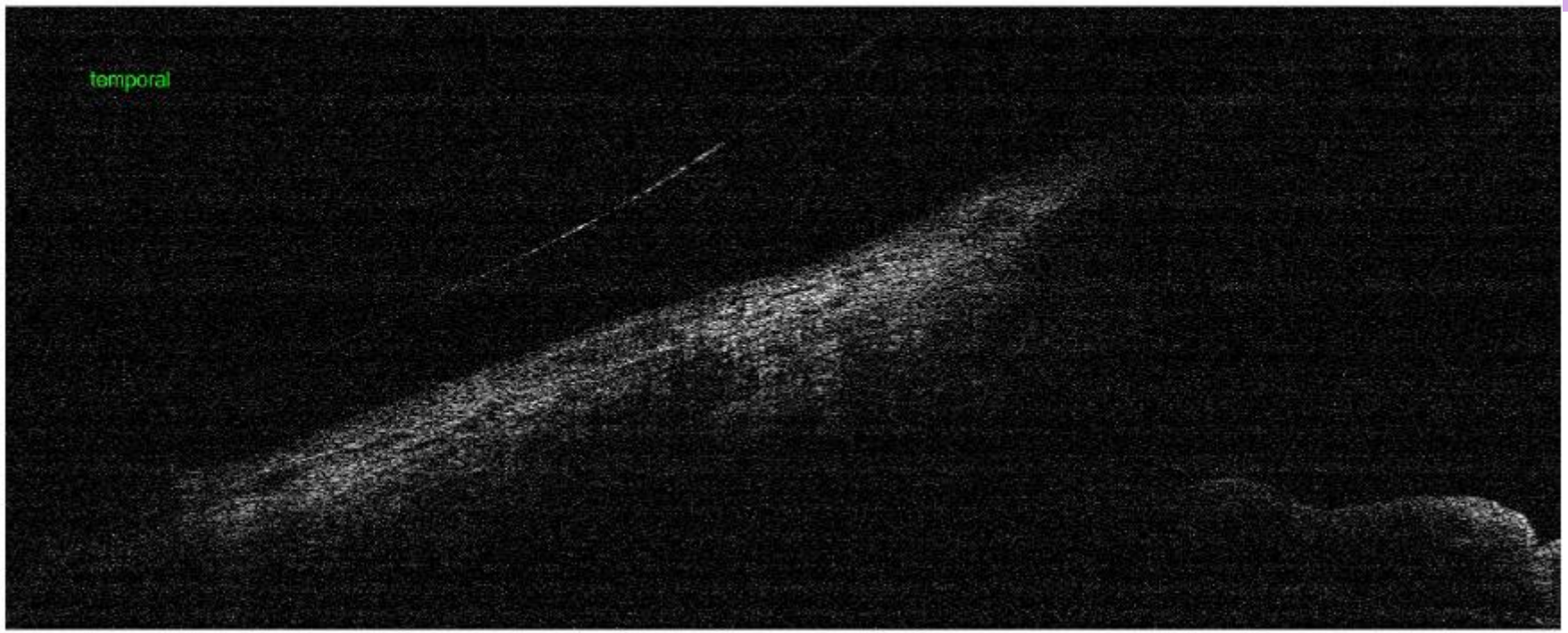

~9 mm
0.0°


N
T
0.0°


Cornea Cross Line
Signal Strength Index 48
Left / OS
IR
250μm
8.00mm Scan Length
Print
OU Report
Comparison
Comment
OPTOVUE


temporal

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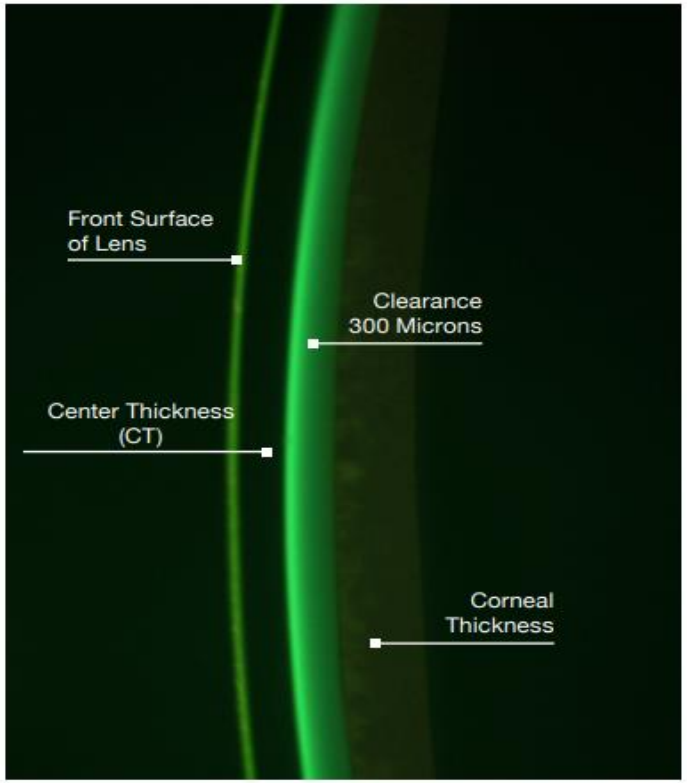
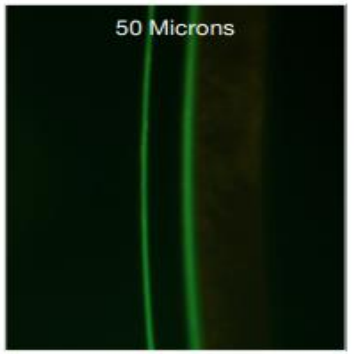
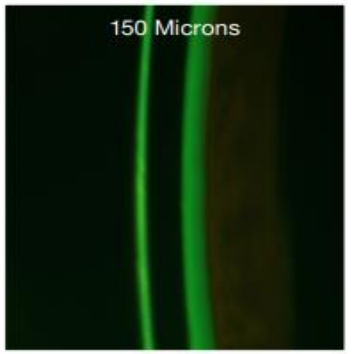
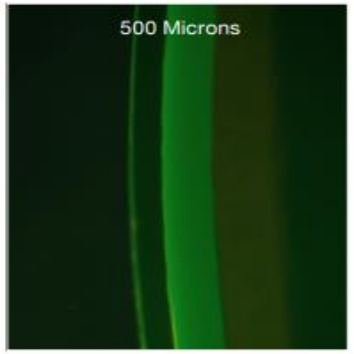
SCLERAL LENS FIT SCALES

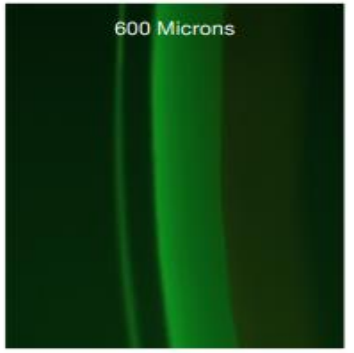
To accurately estimate the amount of vaulting (clearance) underneath the posterior surface of a scleral lens necessitates a reference point for comparison. Although some have suggested corneal thickness for the reference, we prefer the center thickness (CT) of the lens itself which will be listed on the manufacturer's invoice. In each of the examples below, the CT is 0.30mm (300 microns). In most scleral lens designs, the ideal amount of clearance is about 300 microns.



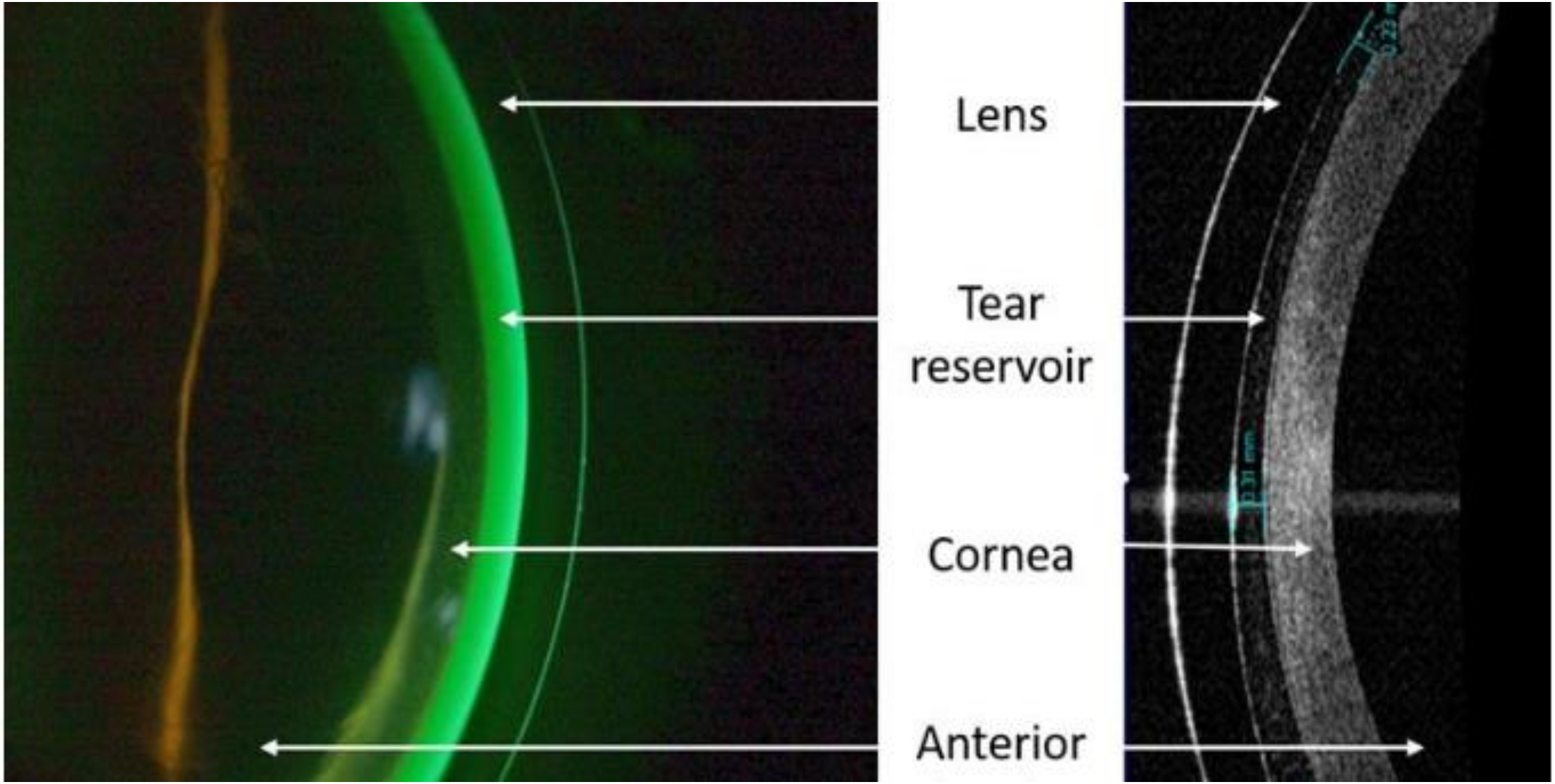








See reverse side for Limbal Vaulting and Edge Landing examples


Lens
Tear reservoir
Cornea
Anterior

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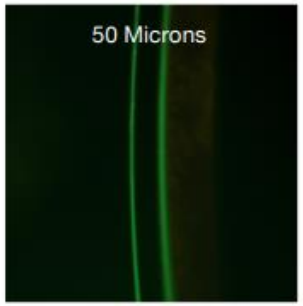
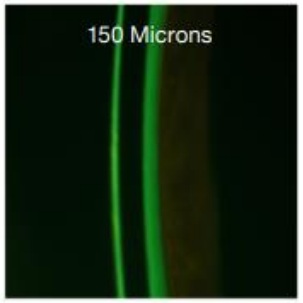
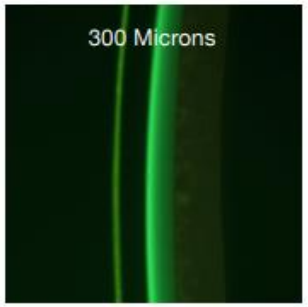
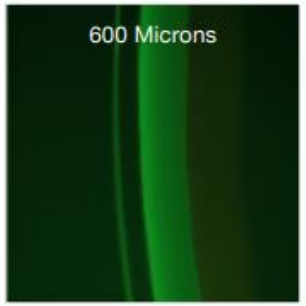
SCLERAL LENS FIT SCALES

CENTRAL VAULTING

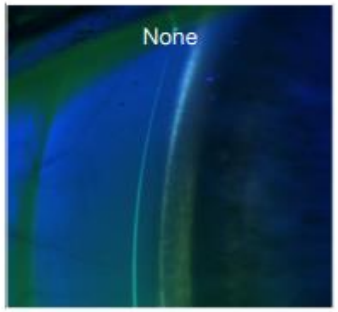


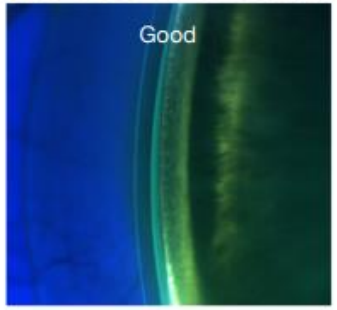


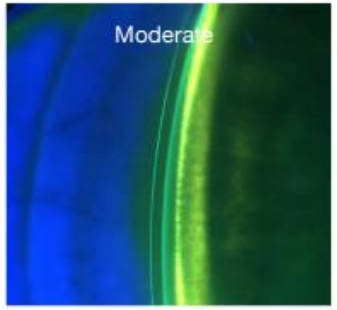




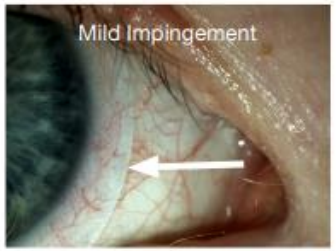
LIMBAL VAULTING

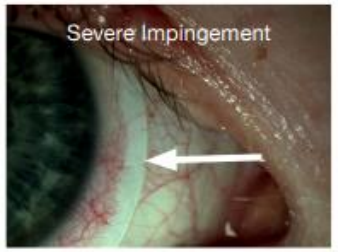






EDGE RELATIONSHIP





Supported by an unrestricted educational grant from Bausch + Lomb Boston Materials

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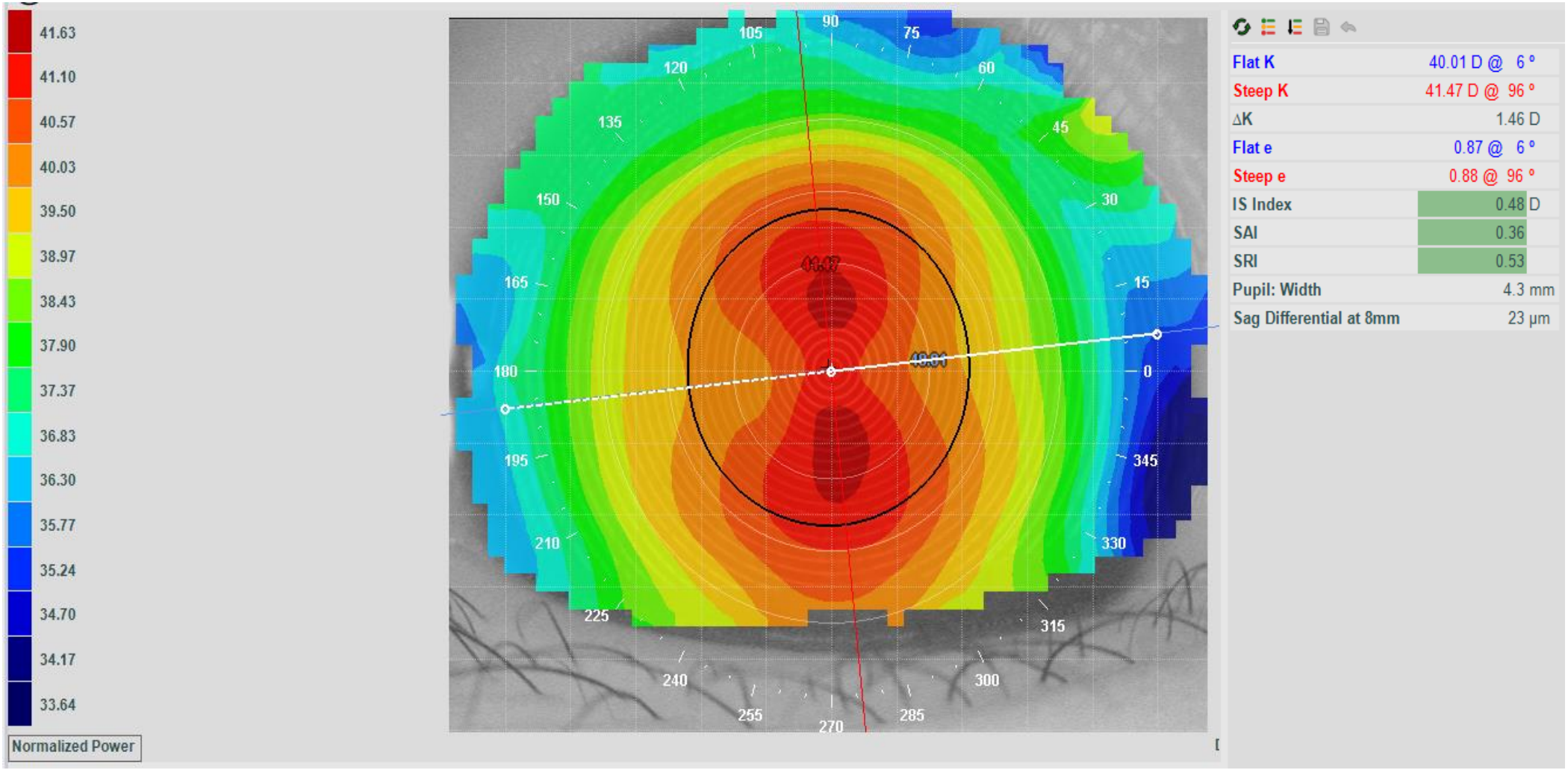
Contact info: CraigNorman@ferris.edu

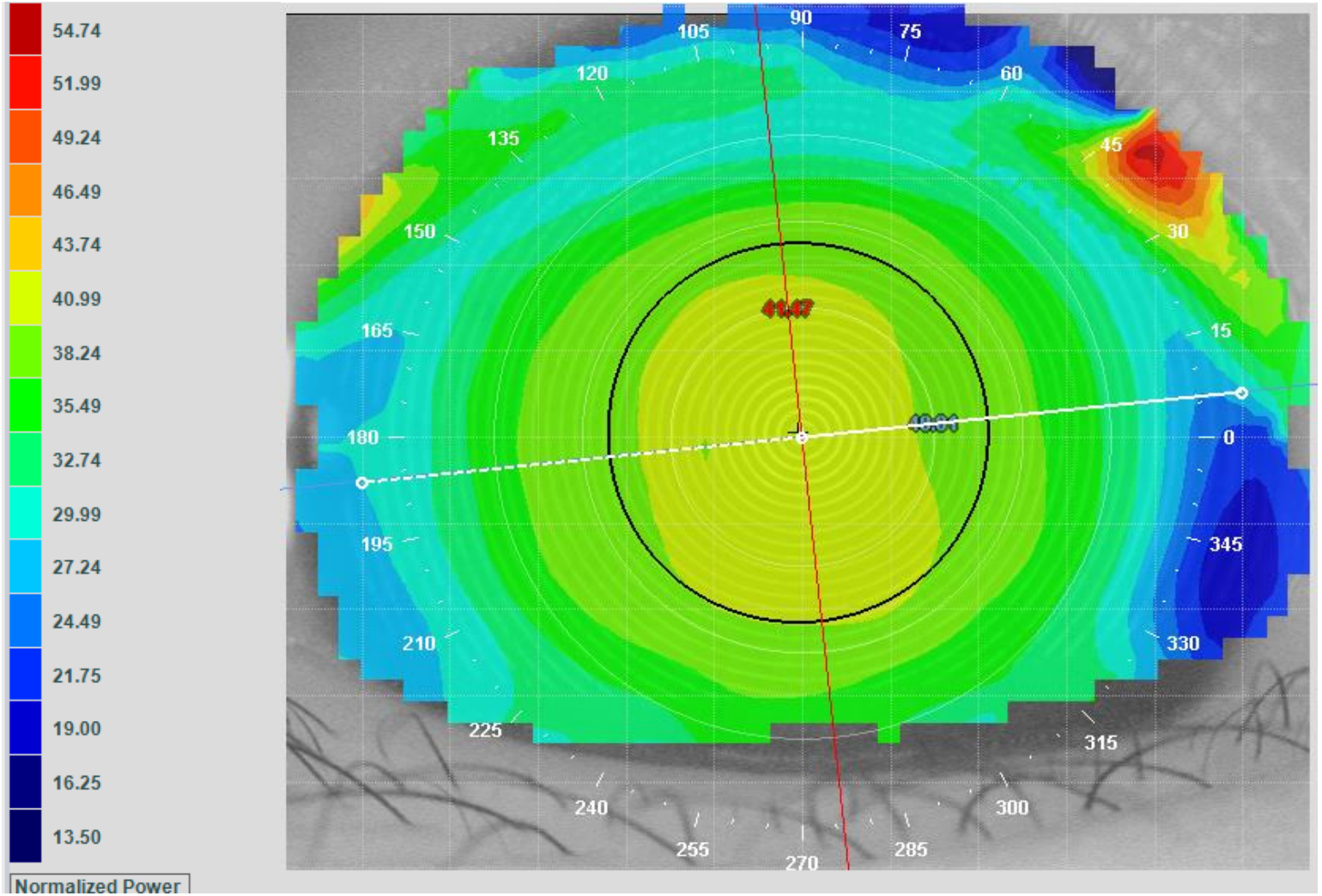
Topography- K's and Refraction

- Apical
- Tangential
- Front elevation map
- Mires
  - Clear vs. Blurry
    - What can this tell you?

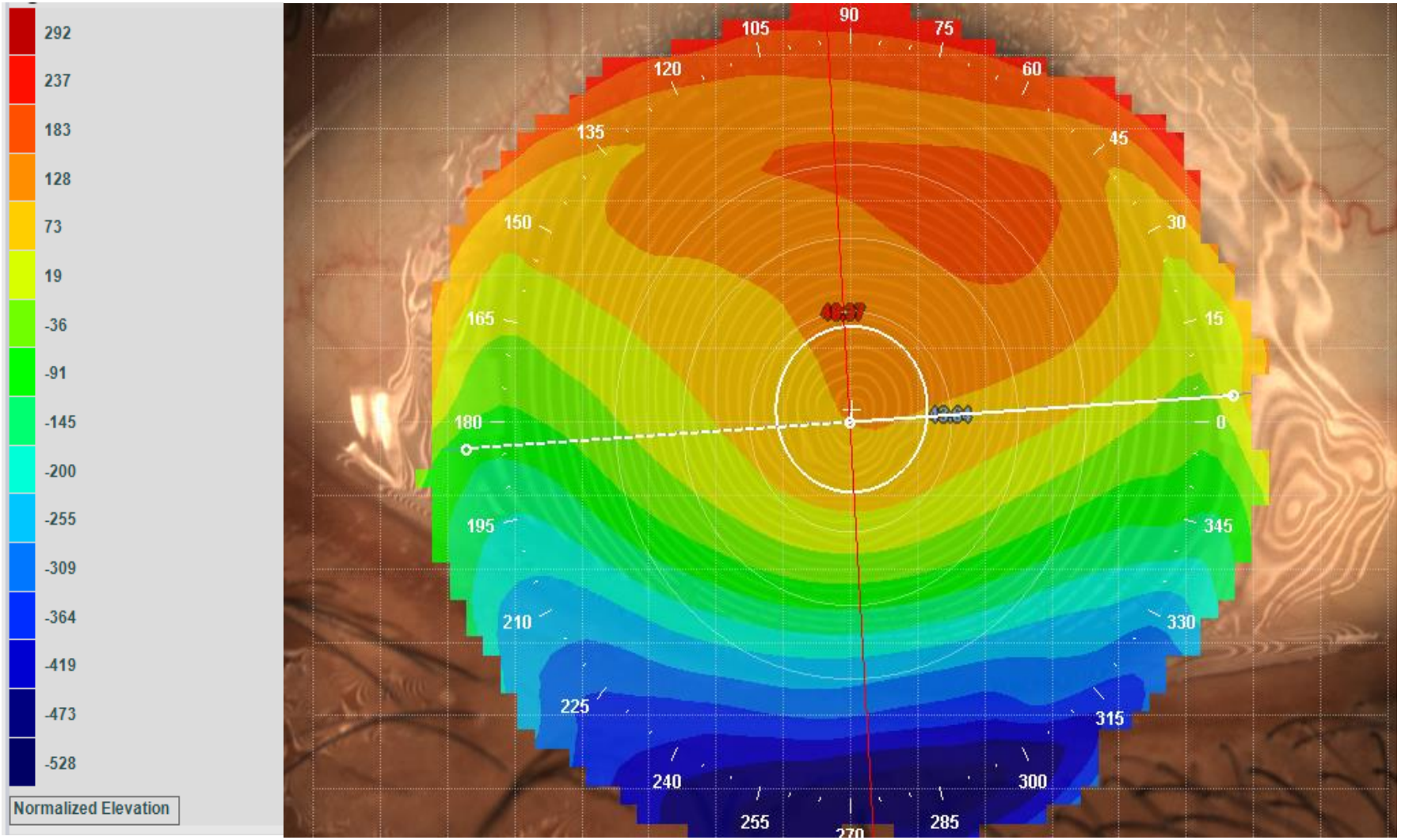
Axial Map


41.63
41.10
40.57
40.03
39.50
38.97
38.43
37.90
37.37
36.83
36.30
35.77
35.24
34.70
34.17
33.64
Normalized Power
90
75
60
45
30
15
0
345
330
315
300
285
270
255
240
225
210
195
180
165
150
135
120
105
Flat K 40.01 D @ 6 °
Steep K 41.47 D @ 96 °
ΔK 1.46 D
Flat e 0.87 @ 6 °
Steep e 0.88 @ 96 °
IS Index 0.48 D
SAI 0.36
SRI 0.53
Pupil: Width 4.3 mm
Sag Differential at 8mm 23 µm

Tangential Map

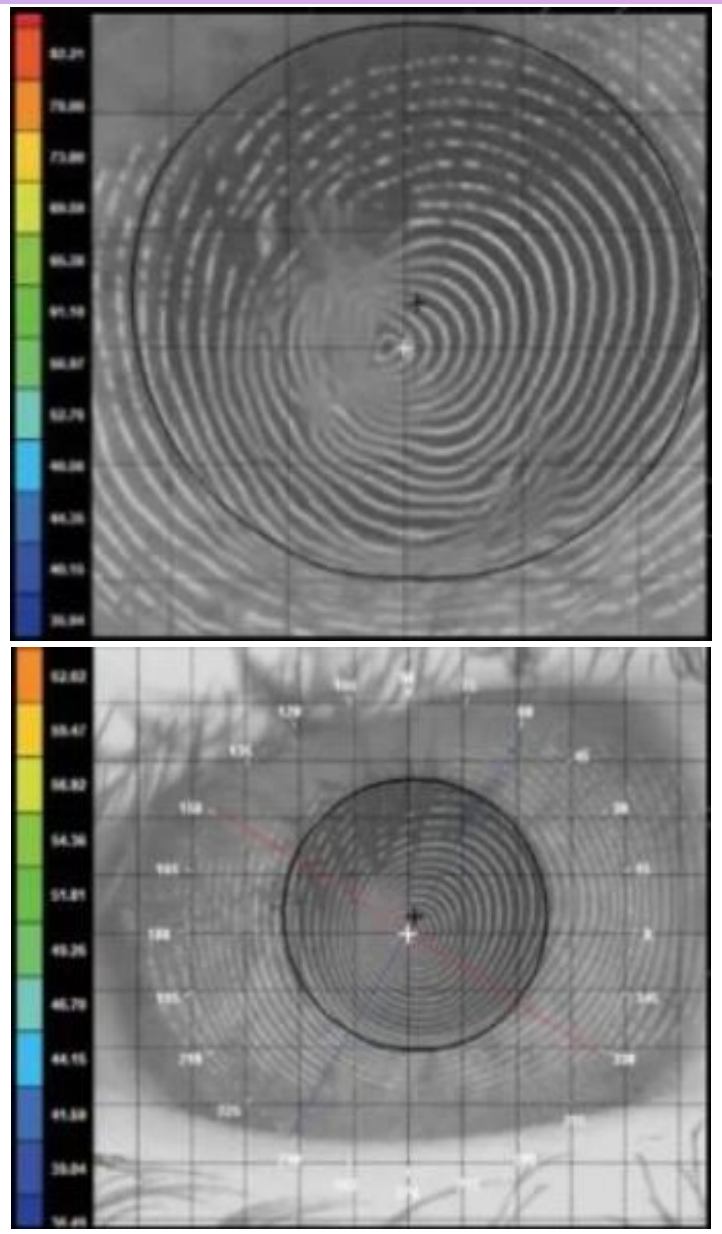


Elevation Map



Topography Tips

- Poor Mire Quality
  - Either from dry ocular surface or very irregular surface
    - Use saline to help to clear the mires
    - Avoid using thick artificial tears
  - Consider doing topography over a single-use soft lens



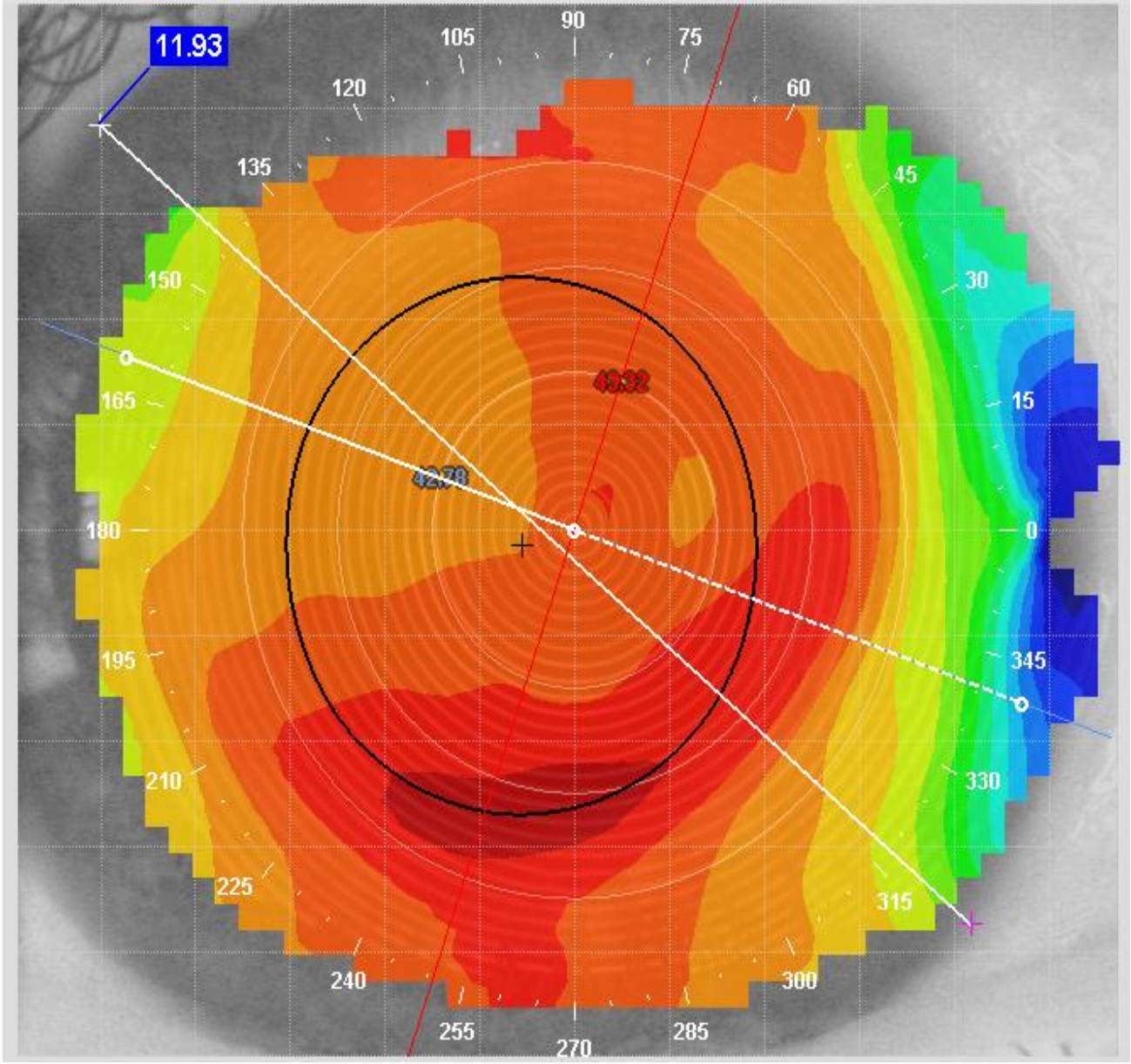
HVID-VVID

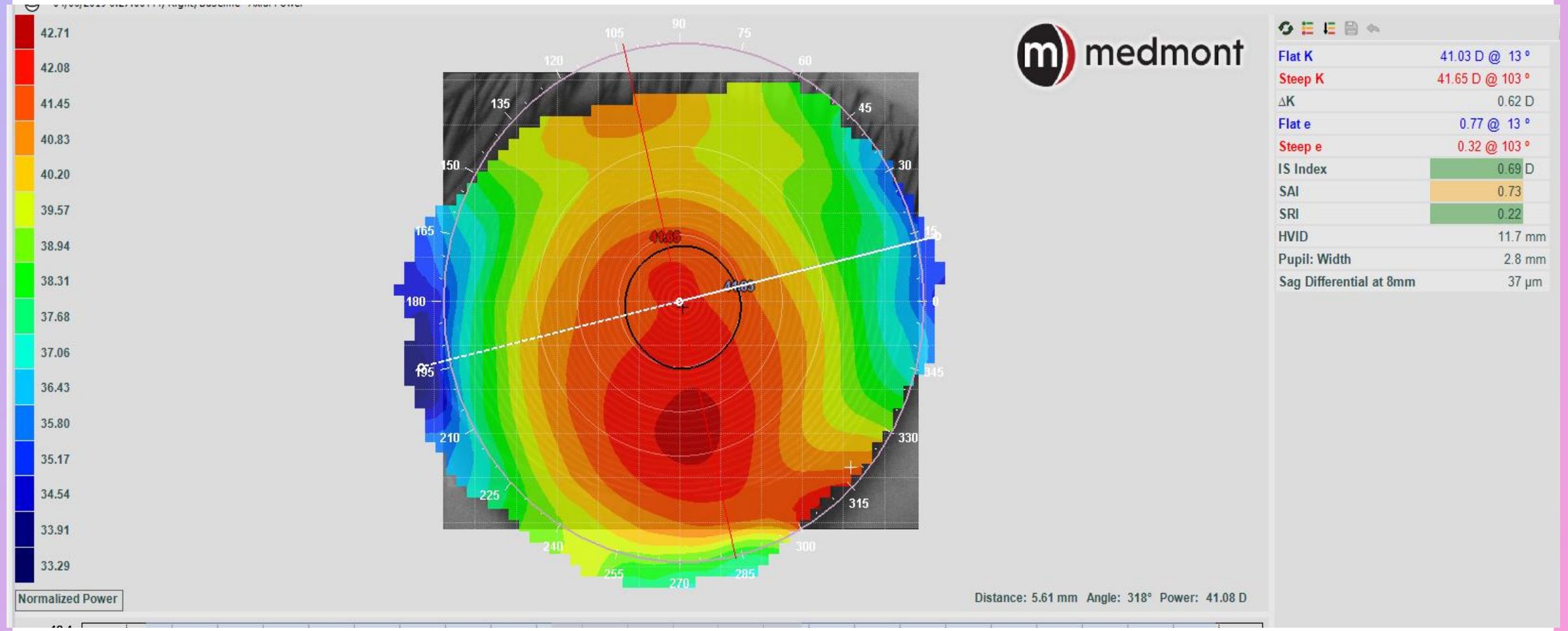
Helps to determine the trial lens selection

Needed for trouble shooting and fit changes

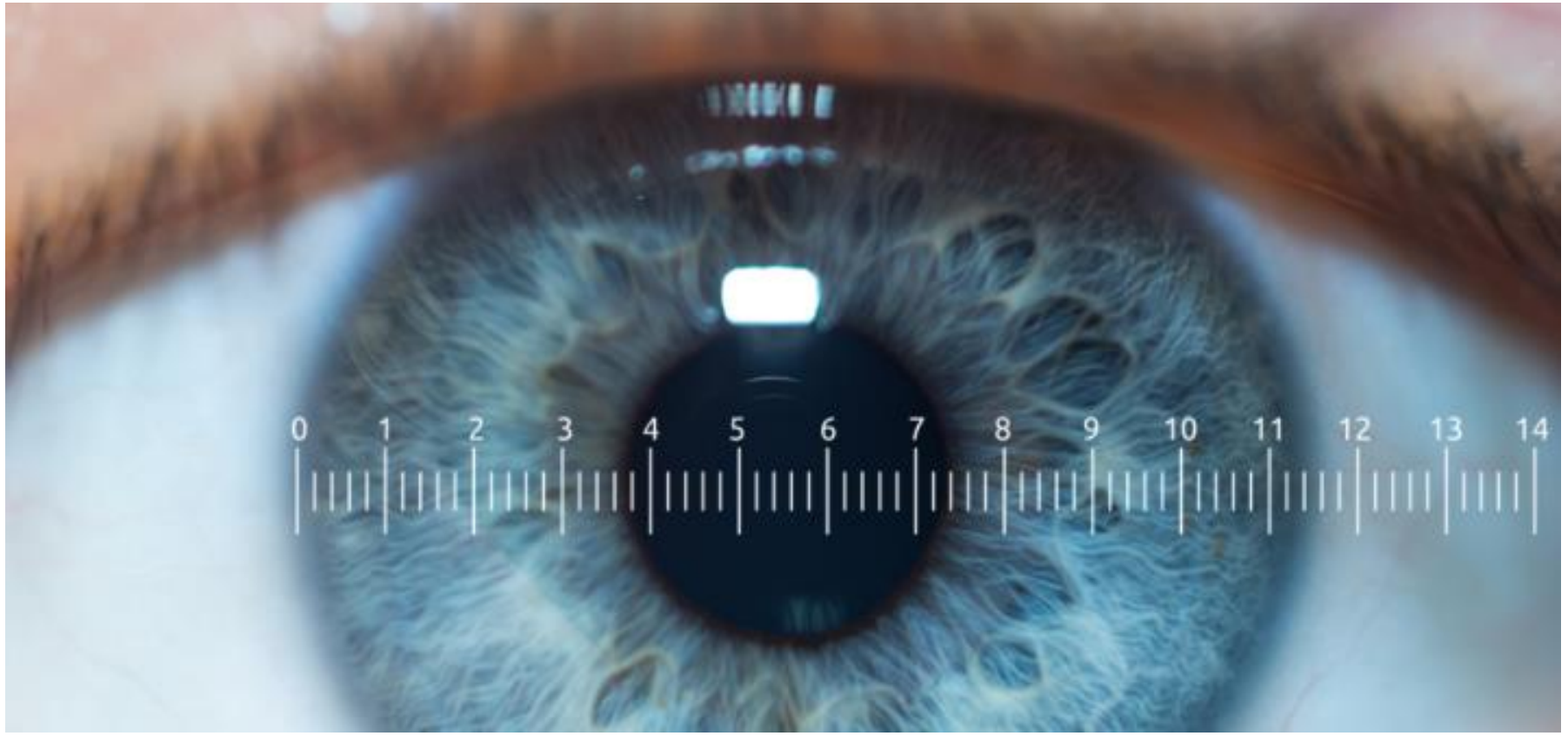
Can help to guide what lens modality will be the best option

Ruler

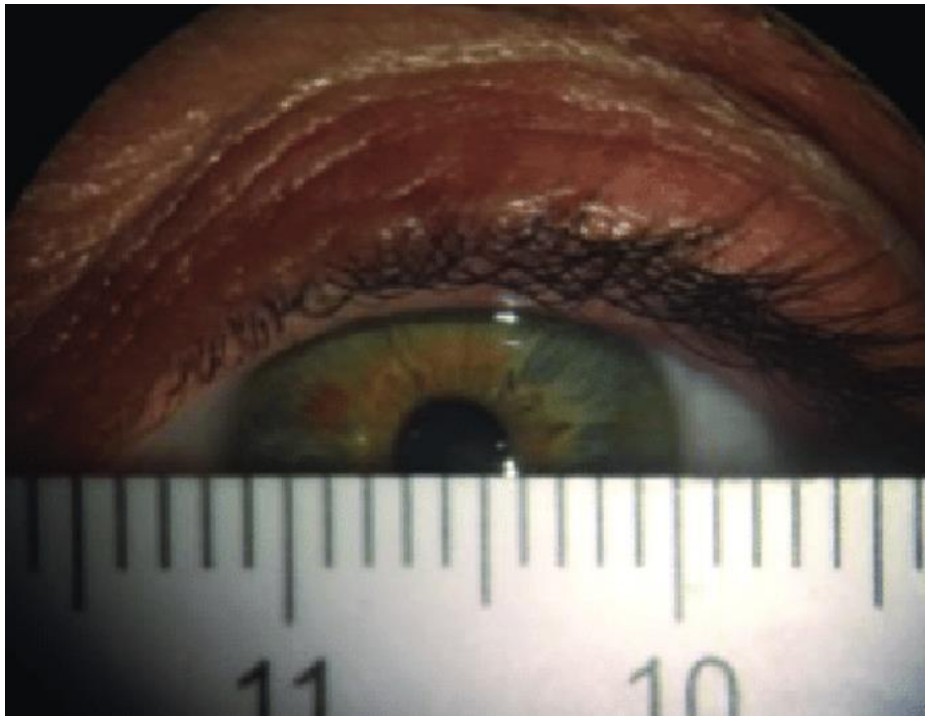

11.93
90
105
75
120
60
135
45
150
30
165
15
180
0
195
345
210
330
225
315
240
300
255
285
270

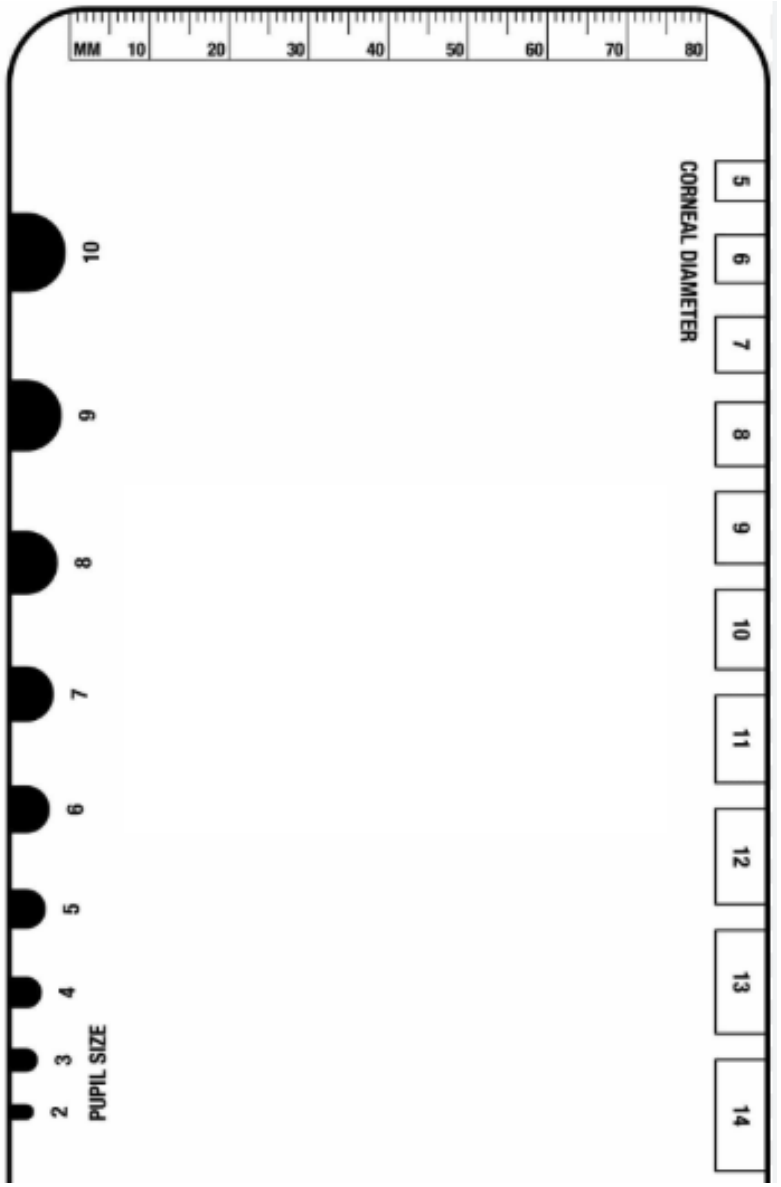

42.71
42.08
41.45
40.83
40.20
39.57
38.94
38.31
37.68
37.06
36.43
35.80
35.17
34.54
33.91
33.29
Normalized Power
medmont
Flat K 41.03 D @ 13 °
Steep K 41.65 D @ 103 °
ΔK 0.62 D
Flat e 0.77 @ 13 °
Steep e 0.32 @ 103 °
IS Index 0.69 D
SAI 0.73
SRI 0.22
HVID 11.7 mm
Pupil: Width 2.8 mm
Sag Differential at 8mm 37 µm
Distance: 5.61 mm Angle: 318° Power: 41.08 D

Slit Lamp Reticle



Pupil Guage or Ruler



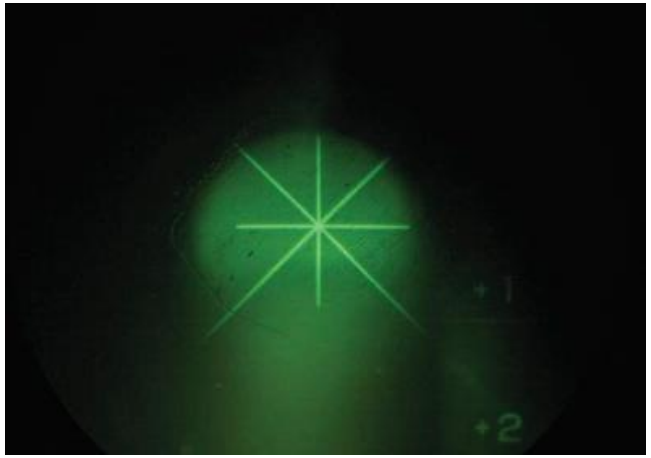


Current lens parameters

Need to know what you are working with before making lens changes

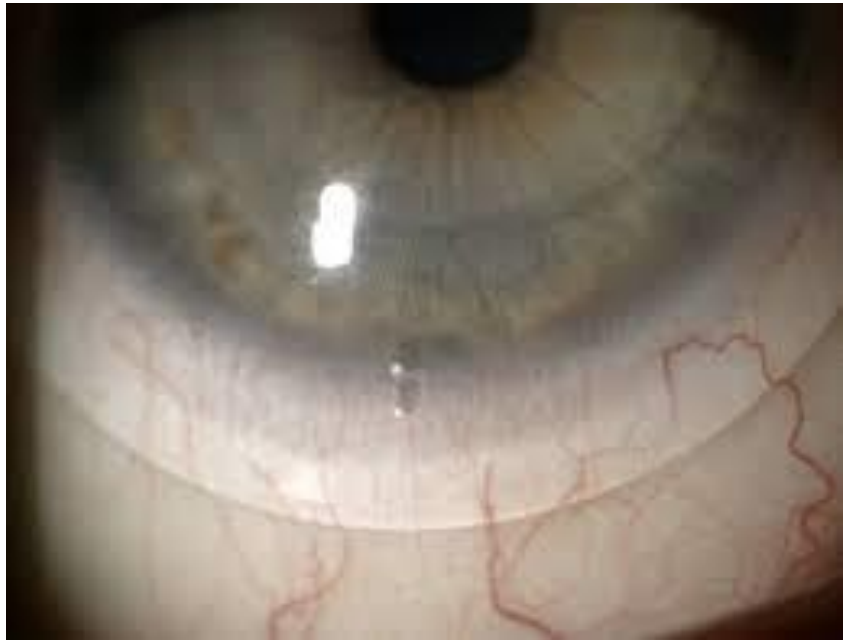
Check for lens flexure

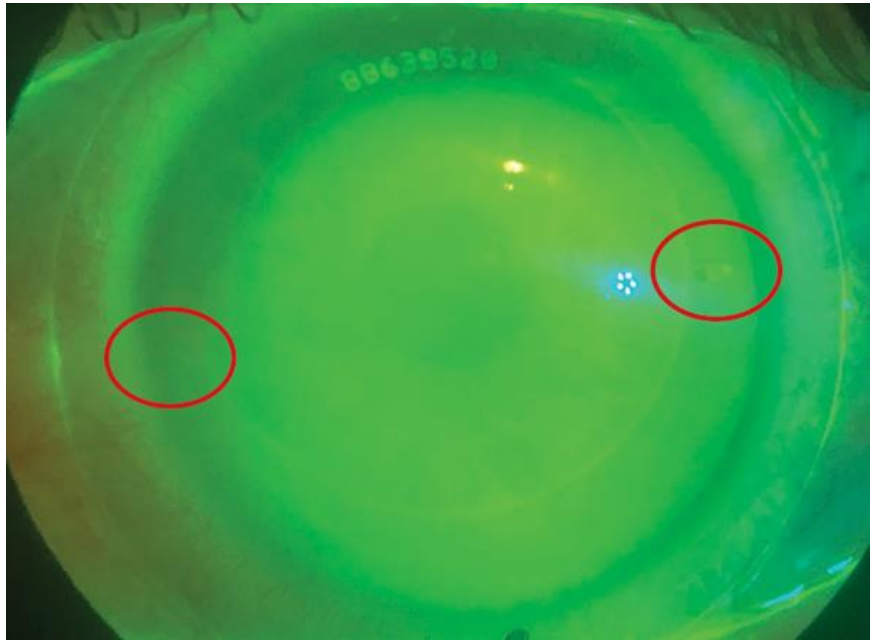
- What are the signs of flexure?
  - Is the axis of the toric over refraction in line with the spectacle cylinder axis?
  - Chasing cylinder
  - Poor BCVA
  - Shadowing with VA
- How to check for flexure
  - Perform Over K's
    - Topography-auto-K's or manual k's
- How to fix flexure?
  - Increase lens center thickness
  - With scleral lenses, confirm that lens is not over vaulted



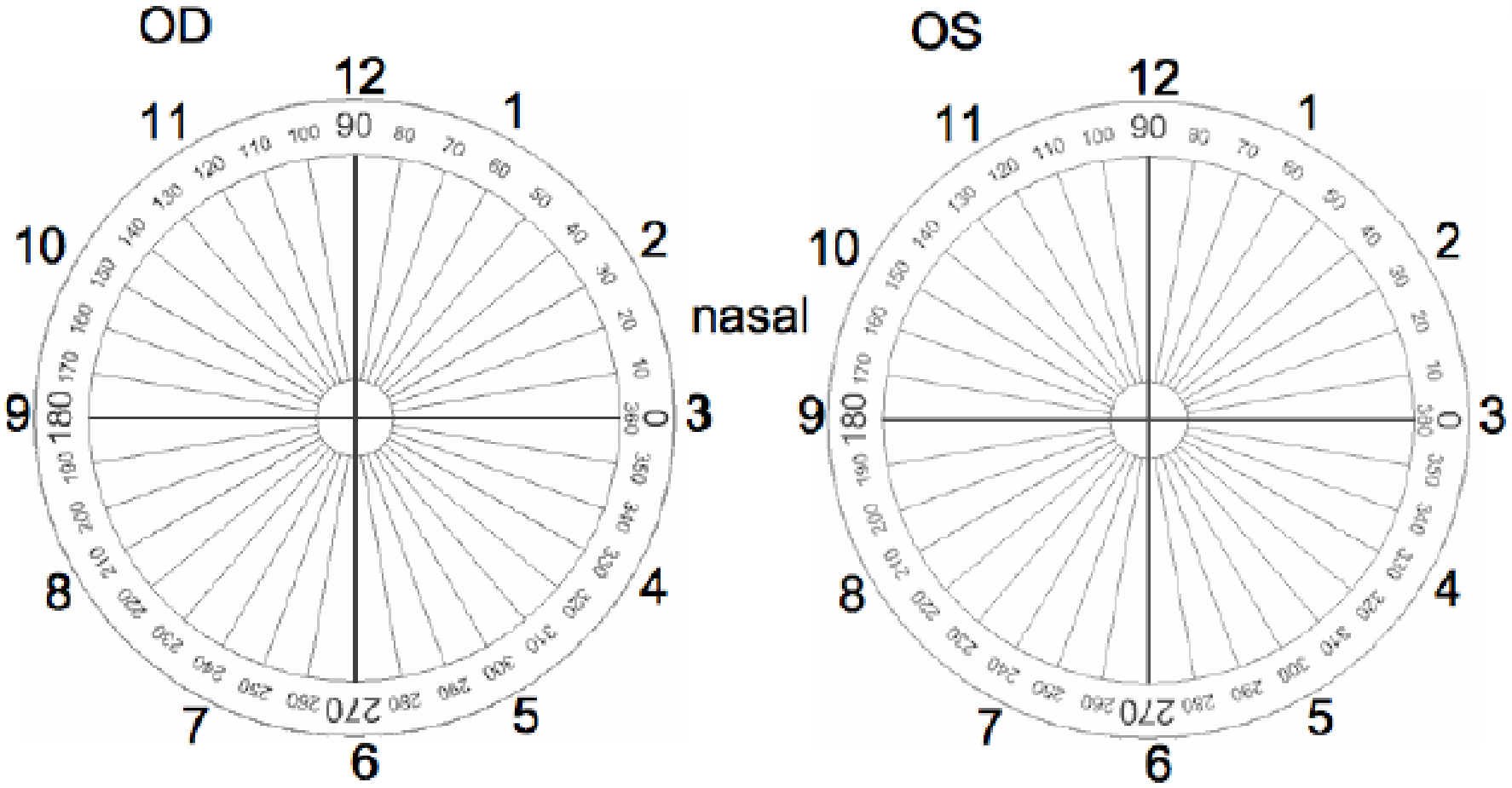
Assessment

- Lens Rotation
  - Is this lens stable with the most previous lens



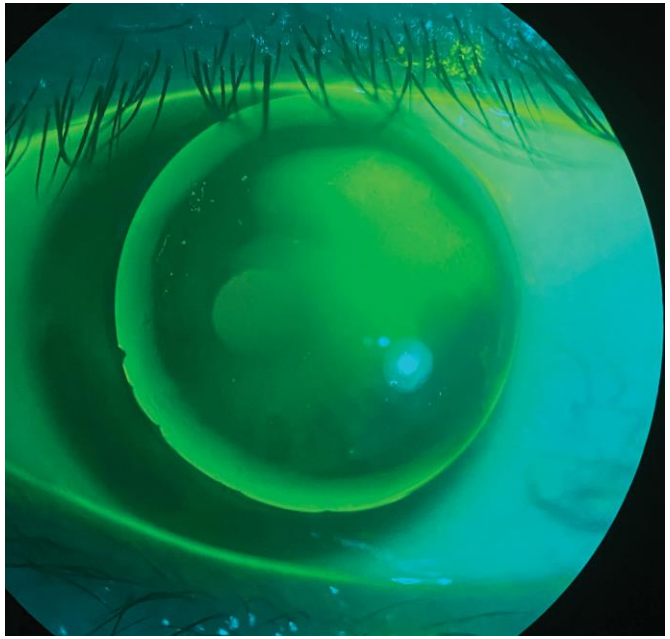


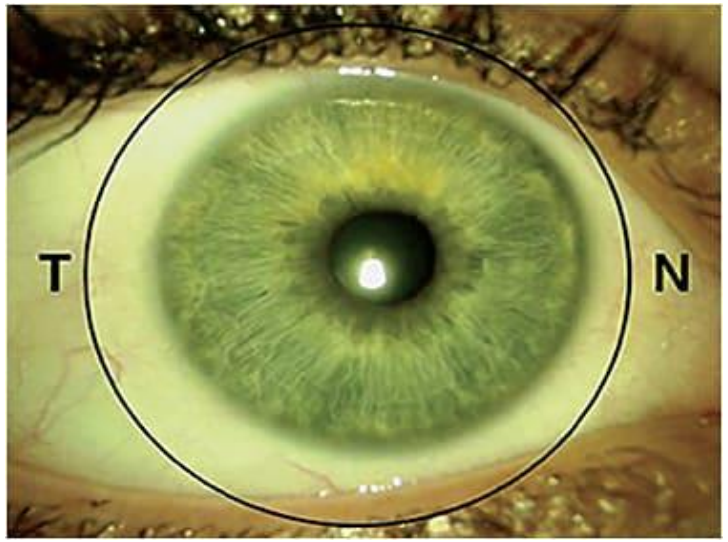
Axis Wheel

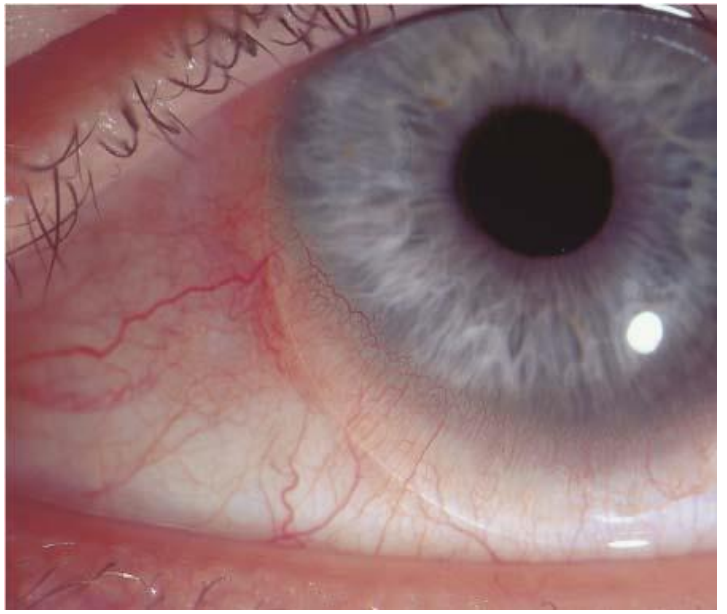

OD
12
1
2
3
4
5
6
7
8
9
10
11
90
180
270
0
nasal
OS
12
1
2
3
4
5
6
7
8
9
10
11
90
180
270
0

Assessment

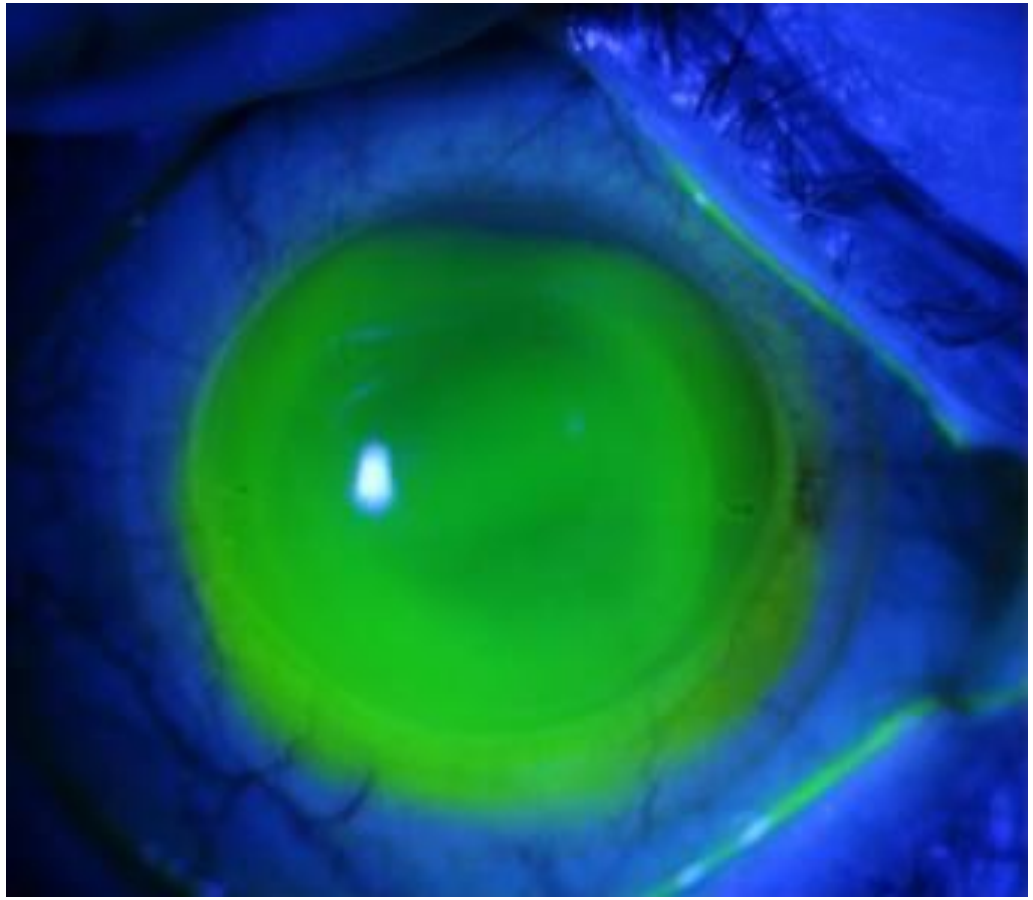
- Lens Position
  - Is it decentered?
    - Inferior or laterally?

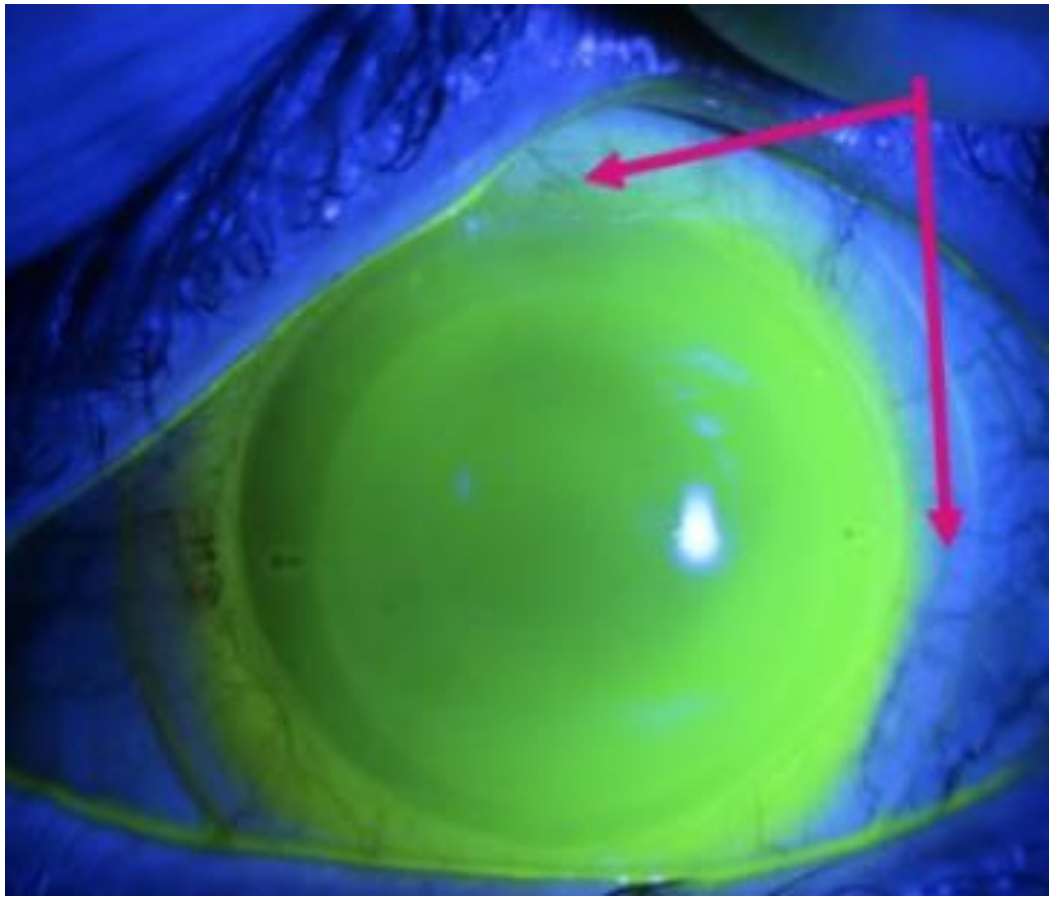






Use Fluorescein!





Assessment

- Lens Fit
  - Central
  - Mid-peripheral
  - Limbus
  - Peripheral curve/landing

Assessment

- Lens Movement
  - Are lenses moving with blink?
  - Are lenses adhered?
  - How much movement?

Assessment

- Corneal findings
  - NaFL staining
- Corneal Edema?
- What material are they in?
- Are they removing lenses daily?
- What solutions are they using?

Plan

- Importance of documentation/notes during call/email
  - Draw pictures
- Organized notes for future reference
- Communicate next steps to ECP
- Always dispense the lens if fit is close, as long as patient is safe to wear.

Communication is Key

- Make sure you're speaking the same language
  - Every lens design has its own terminology and lens adjustments
    - It is important to be on the same page as your lab
  - Encourage phone call conversation instead of email
    - Can result is less lens remakes = less office visits
  - More information is better than not enough information
  - A picture is worth a 1000 words!

Pearls for success

- Patience
  - Be patient with the ECP or the consultant
- Take the opportunity to coach and educate the ECP on
  - What information is needed and helpful
  - How to interpret findings and make lens adjustments

Pearls for success

- Enhance time efficiency
  - Make sure ECP knows what is needed to prepare for your call
  - Saves time for the ECP and the consultant
- Know when to ask for help
  - Reach out to a colleague or coworker
  - Reach out to the sale rep for in-office support
- Use your lab consultants!
  - This is truly the best resource that your contact lens lab have!

Questions?

Thank You!