

Hybrid Contact Lens Case Series

Avani Davé, OD, FAAO

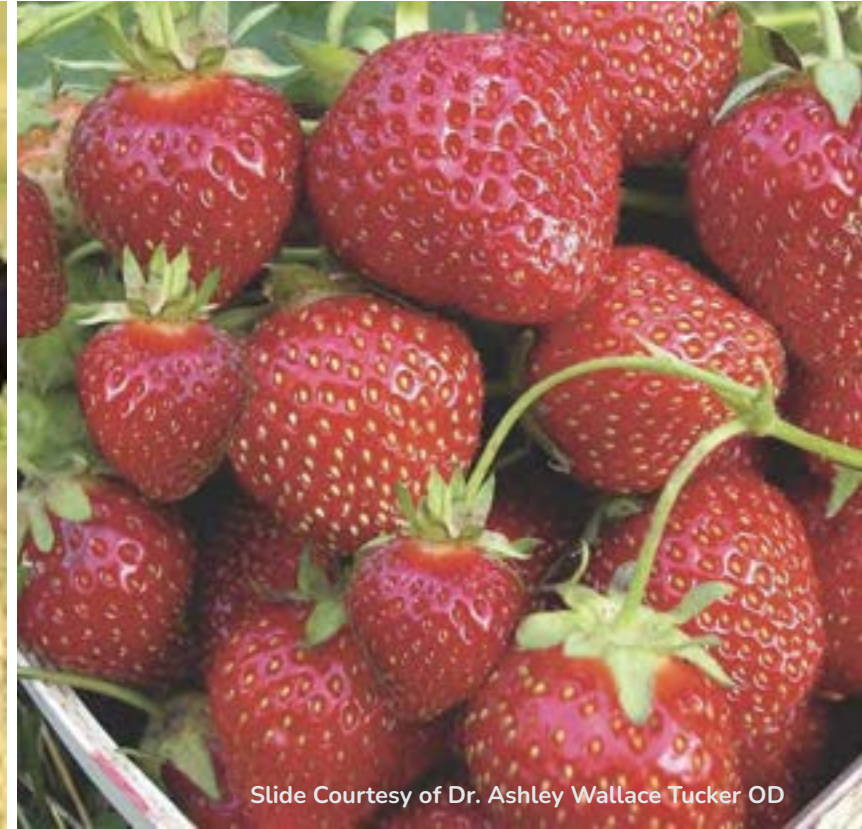
Financial Disclosure Statement

Avani Davé has received honorarium from Boston Sight. She is on the Speaker Bureau for Bausch and Lomb, Tarsus Pharmaceuticals, Nordic Pharmaceuticals and Alcon

All relevant relationships have been mitigated

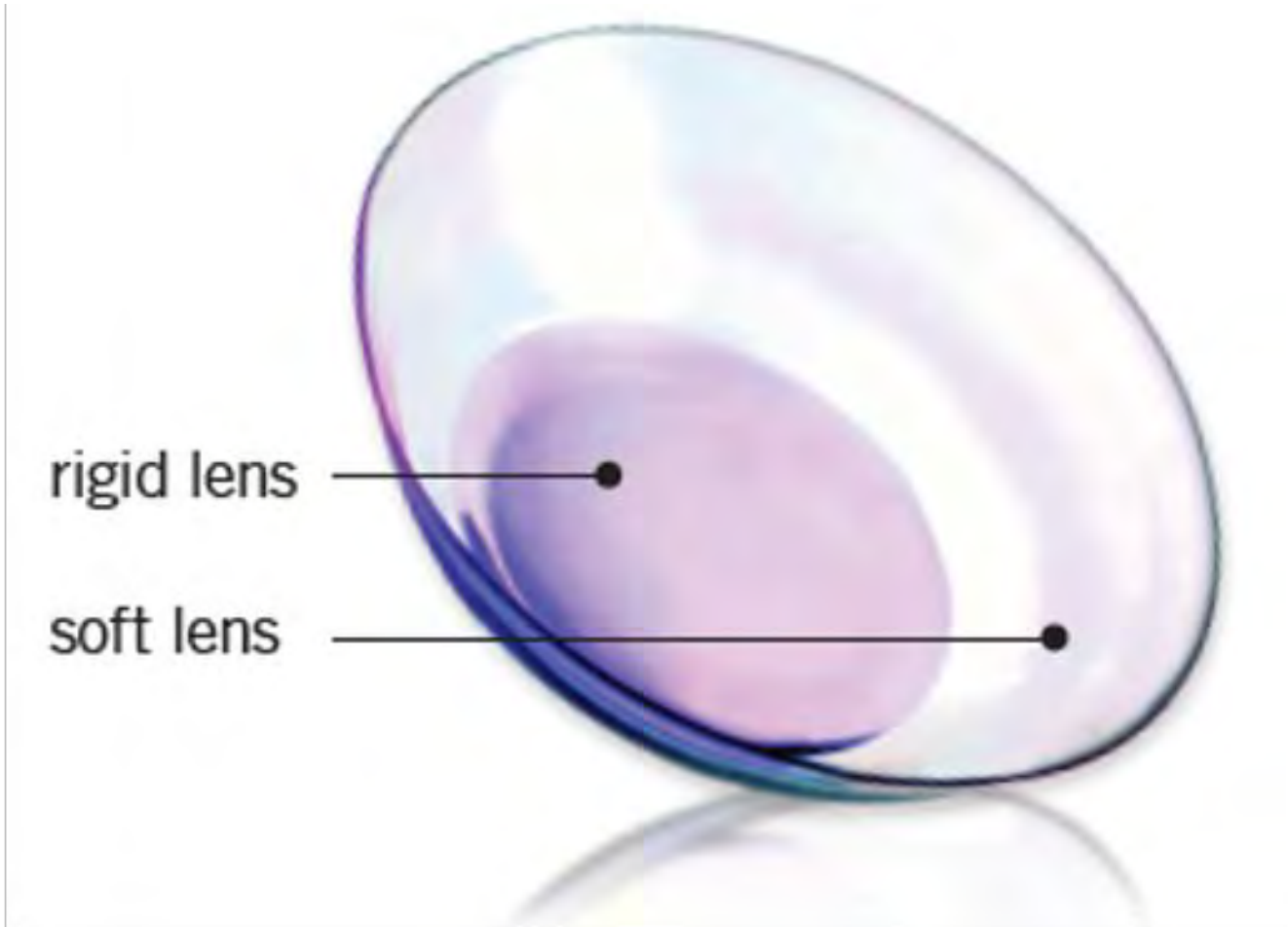


Hybrids are EVERYWHERE!



Slide Courtesy of Dr. Ashley Wallace Tucker OD

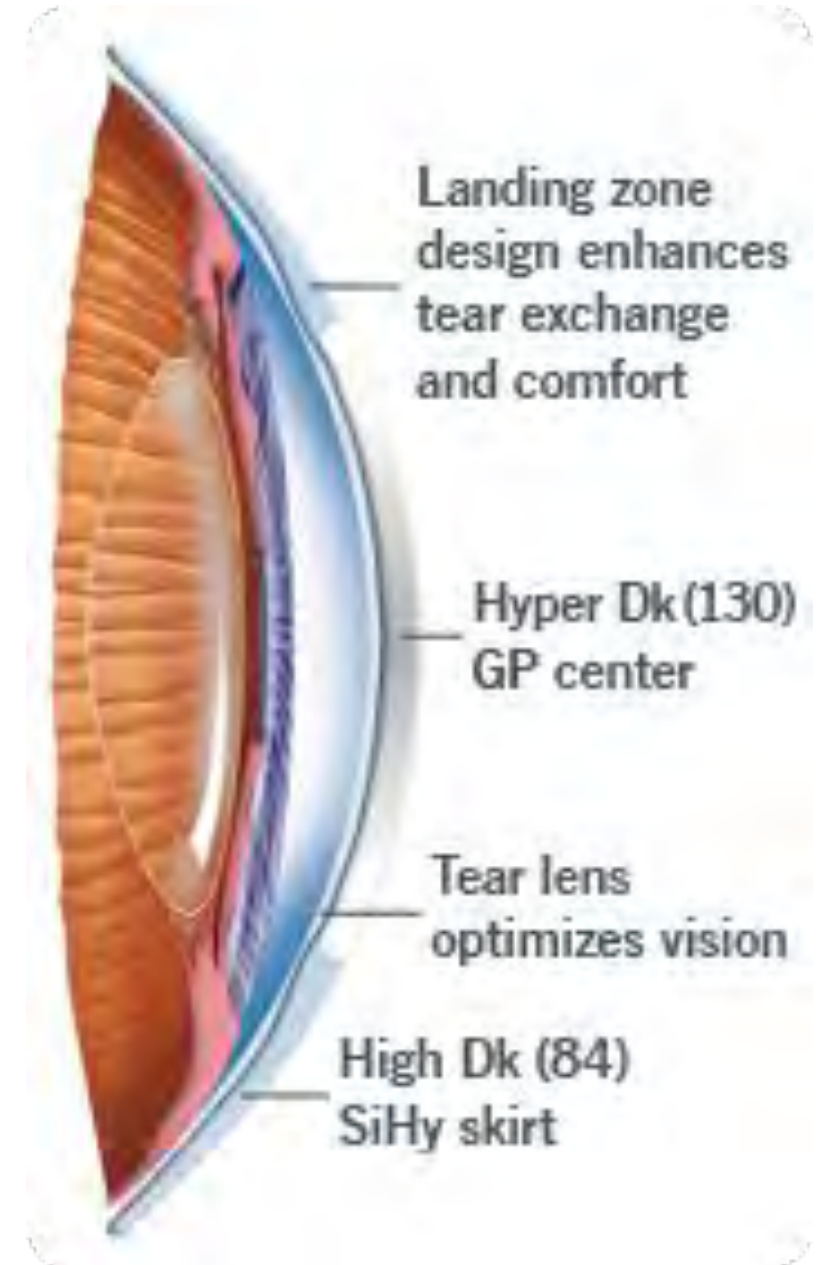
What is a hybrid lens?



- Combines two types of lens materials into one unique lens
 - Center consists of rigid gas permeable material to provide clear and stable vision
 - Surrounding soft skirt provides comfort throughout the day

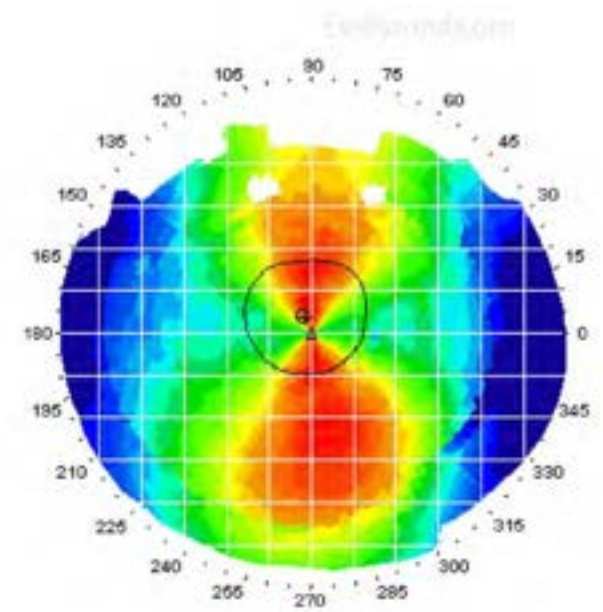
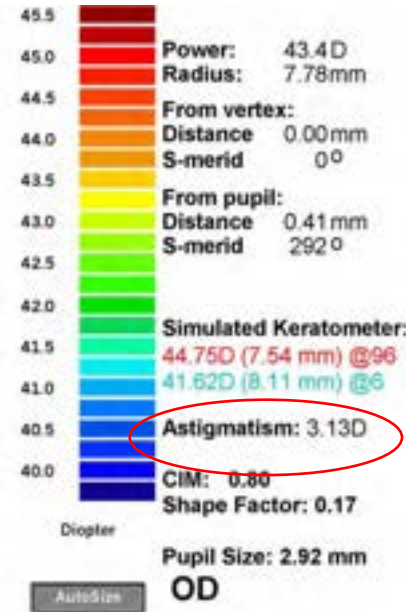
Additional Advantages of Hybrid Lenses

- Great option for astigmatic patients
 - Vision NOT affected by lens rotation
- 130-Dk GP and 84-Dk silicone hydrogel soft skirt provide excellent oxygen transmission
- Tangible™ Hydra-PEG coating provides increased lubricity
- SoftCushion® Comfort Technology enhances comfort



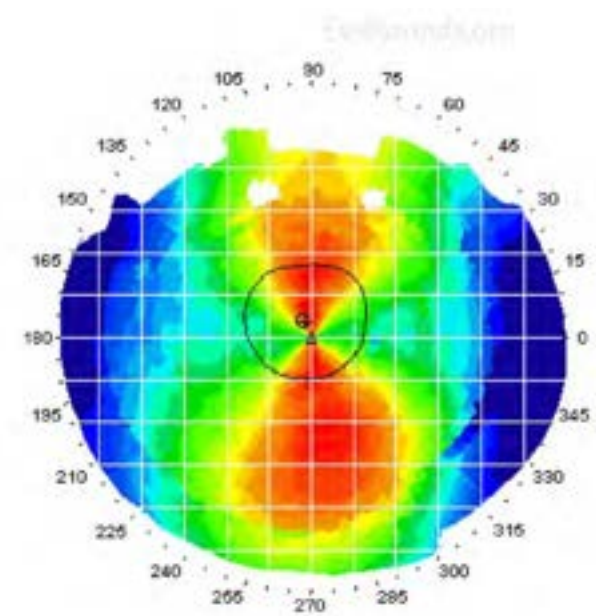
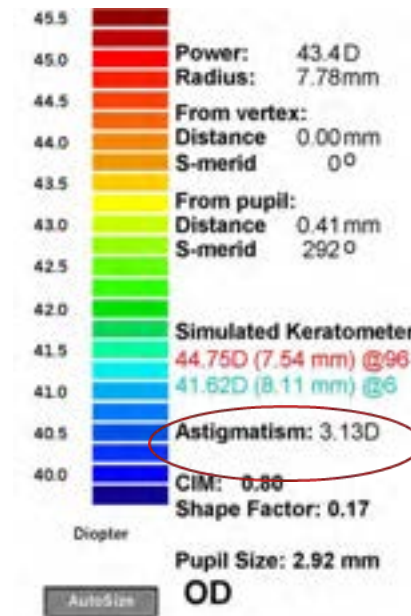
GOOD candidate for HYBRIDS

- Low to high astigmats
- Unhappy toric SCL wearers
- Intolerant RGP wearers
- Presbyopic combined with astigmatism
- Soft MF wearers who want crisper vision with a greater range
- Corneal astigmatism **MUST** match refractive cylinder
 - -2.00-3.00x180



POOR candidates for HYBRIDS

- Last resort patients
- Patients who prefer convenience over everything
- Ocular surface/dry eye patients
- Non-compliant patients
- **Patients with residual astigmatism**
 - **-2.00-5.00x180**



Most EXCITING Advantage:

**Exclusive to Eye Care
Professionals**

**Not available online or through
mass merchandisers!**

Hybrid Portfolio

SynergEyes
A, KC, PS,
MF

Duette

Duette
Progressive

SynergEyes
iD

SynergEyes
iD Multi-Focal
EDOF

UltraHealth

UltraHealth
FC

Fitting Process

- Fitting Set
- Empirical Fitting
 - Online Calculator
 - Consultation

SynergEyes Empirical Lens Calculator

Both Eyes Right Eye (OD) Left Eye (OS)

Right Eye (OD)

SynergEyes® iD MF EDOF

Enter Keratometry Readings

K1 K2 mm diopters HVID (in 0.01 mm steps)

Enter Manifest Refraction (MR)

Sphere Cylinder Add Power

Additional Options Enhanced Profile Tangible Hydra-PEG

Suggested Lens Parameters: SynergEyes® iD MF EDOF

Base Curve	Skirt	Power	Add Power
NA	NA	NA	NA

Left Eye (OS)

SynergEyes® iD MF EDOF

Enter Keratometry Readings

K1 K2 mm diopters HVID (in 0.01 mm steps)

Enter Manifest Refraction (MR)

Sphere Cylinder Add Power

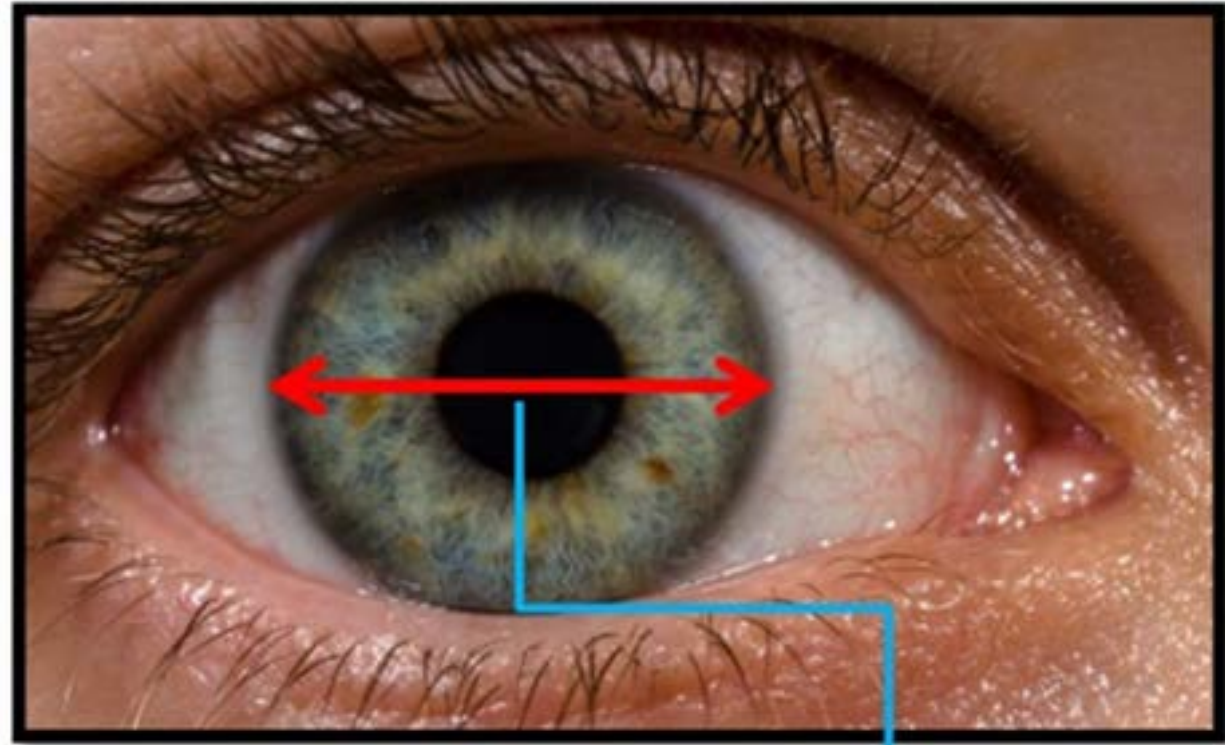
Additional Options Enhanced Profile Tangible Hydra-PEG

Suggested Lens Parameters: SynergEyes® iD MF EDOF

Base Curve	Skirt	Power	Add Power
NA	NA	NA	NA

KEY Data Points for REGULAR CORNEA

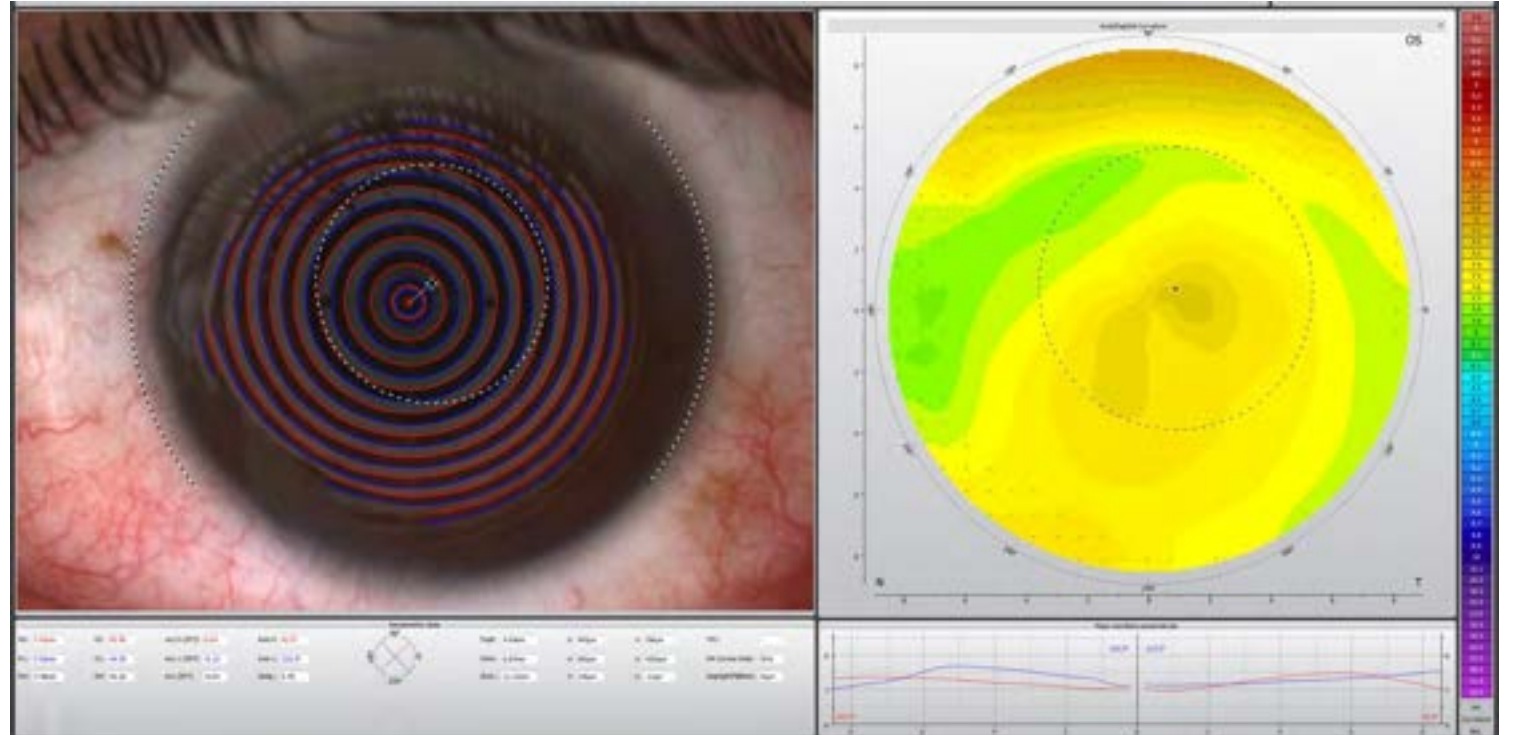
- Manifest Refraction
- Keratometry Values
- HVID



Horizontal Iris Visible Diameter (HVID)

KEY Data Points for IRREGULAR CORNEA

- Manifest Refraction
- Topography
 - Eccentricity value
- HVID

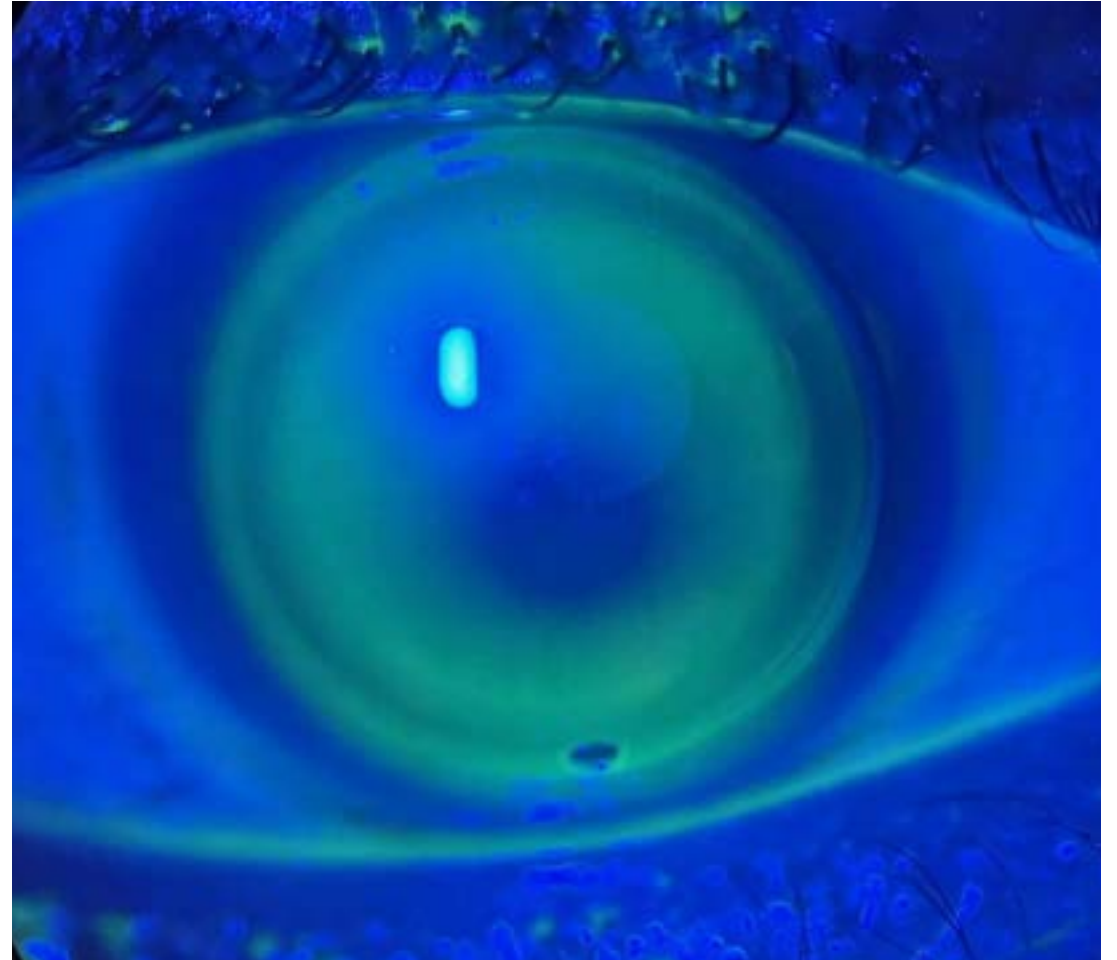
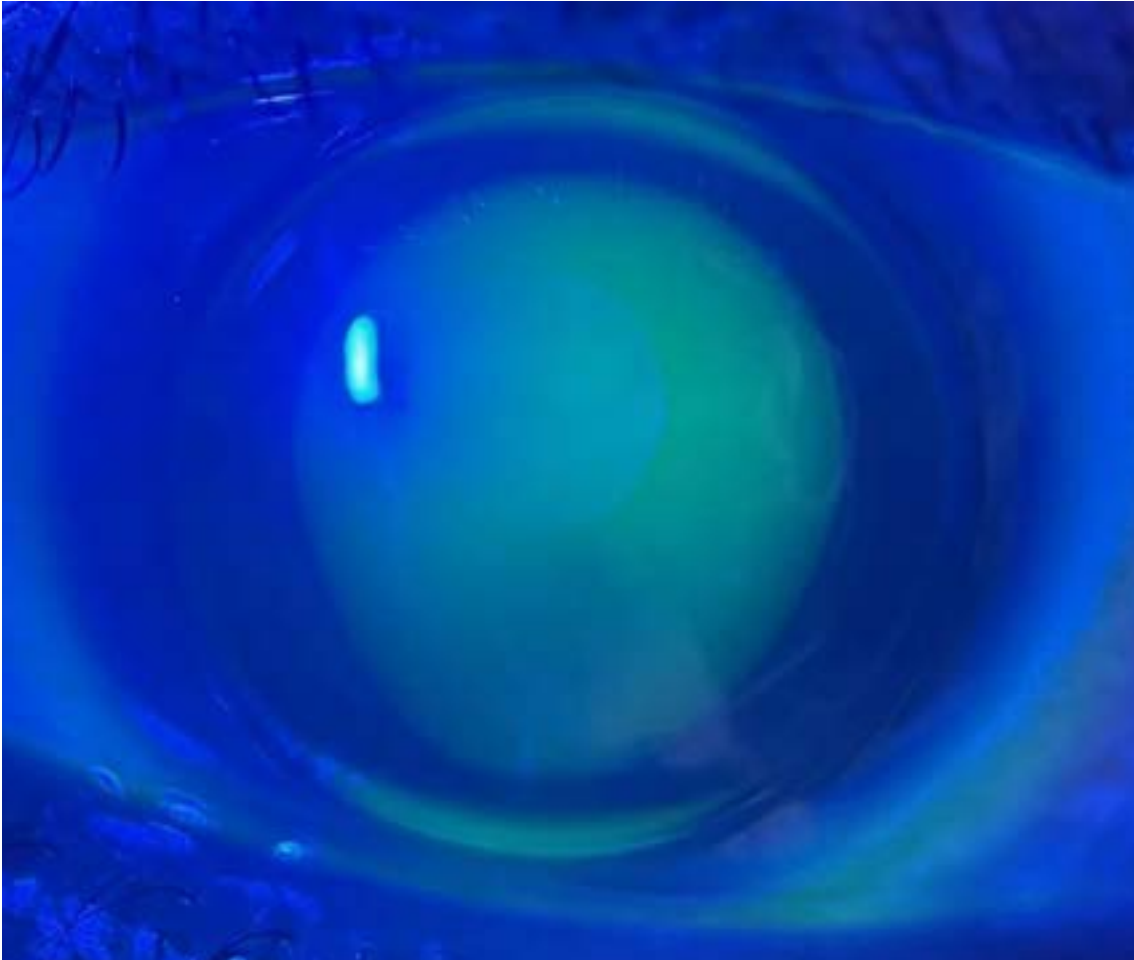


Ideal Fit

- Good centration
- Optical zone over the pupil
- 0.5mm to 1.00mm of movement with each blink
- GP portion in alignment with the cornea

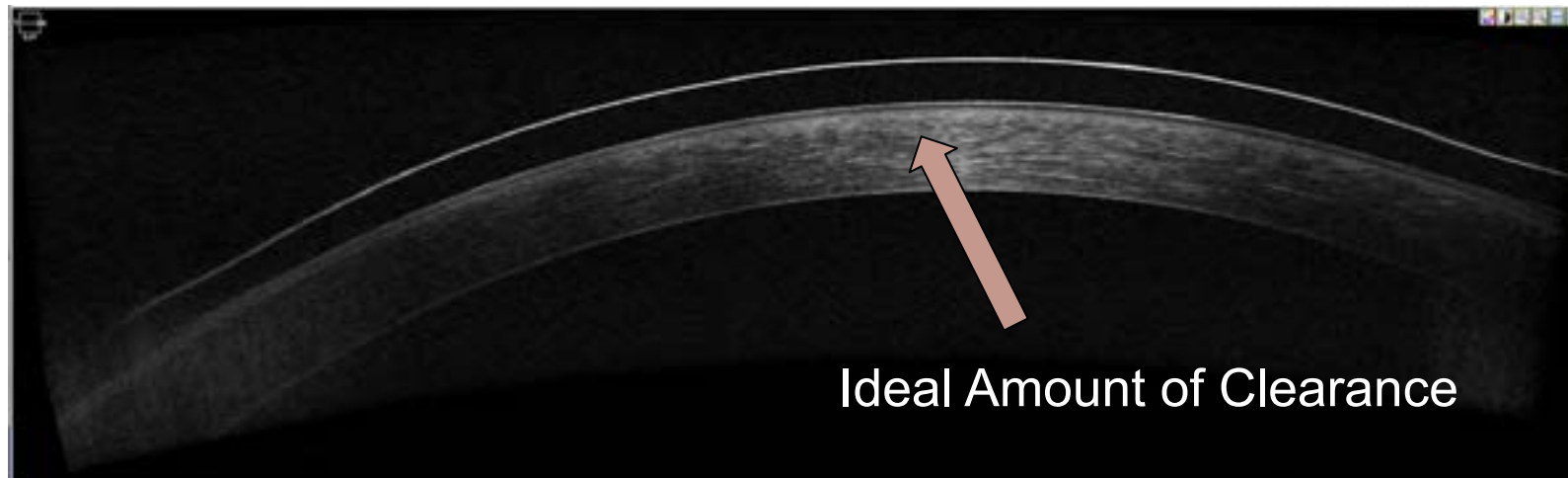
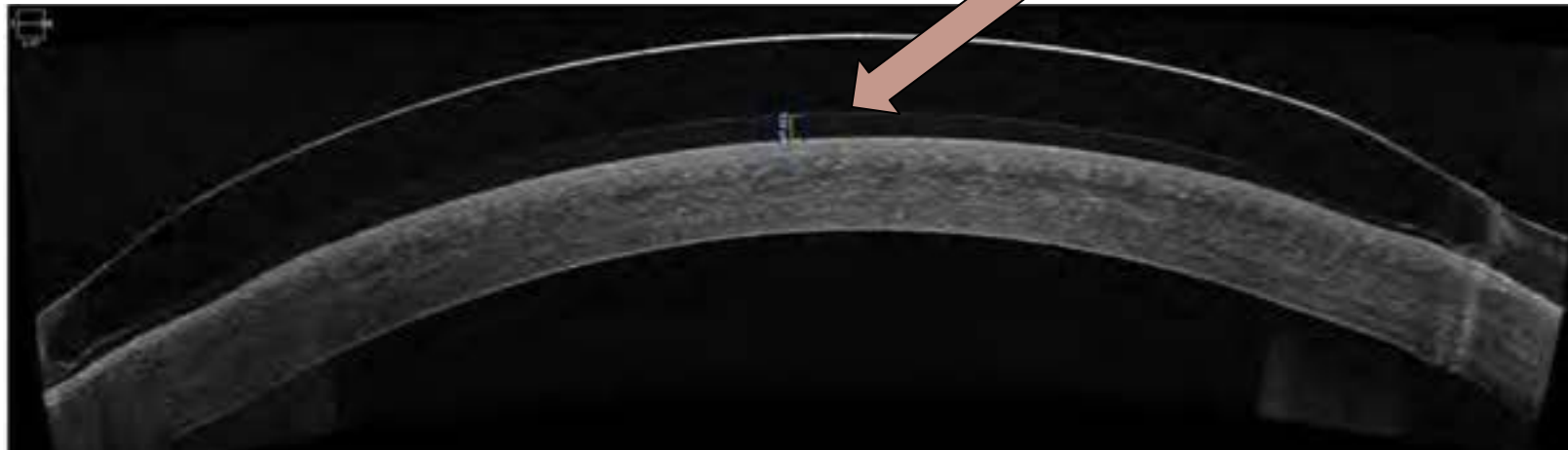


Poor Fluorescein Patterns



OCT: Not necessary but fun to look at!

Clearance amount will change
with settling time

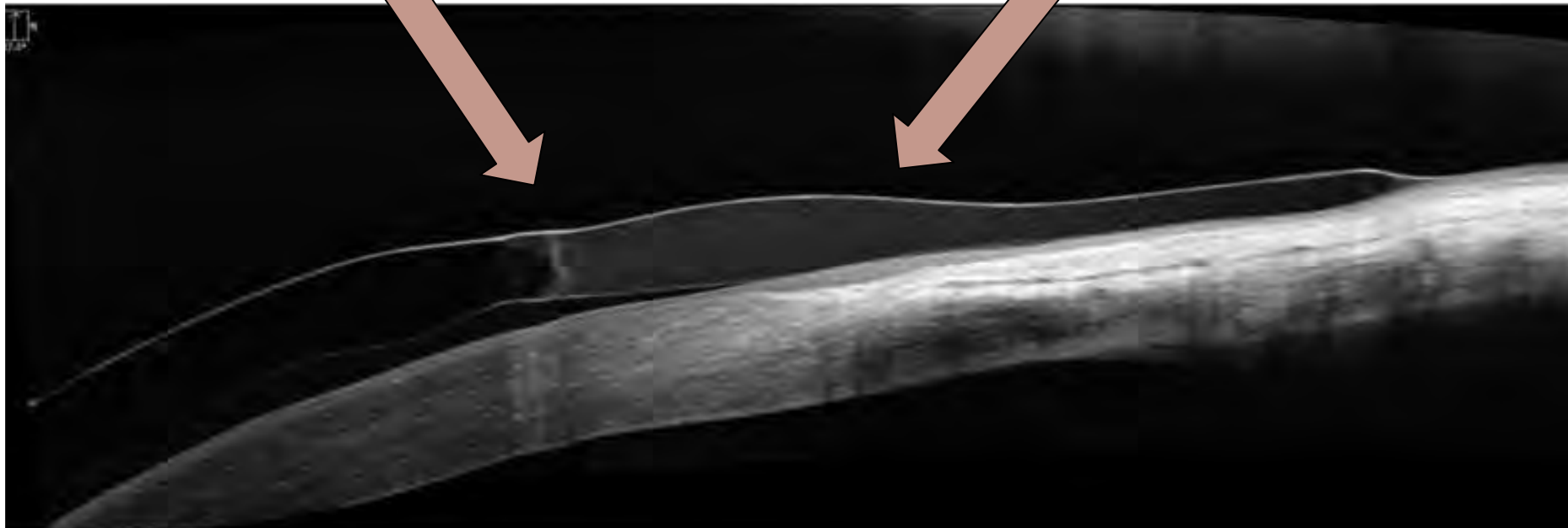


Ideal Amount of Clearance

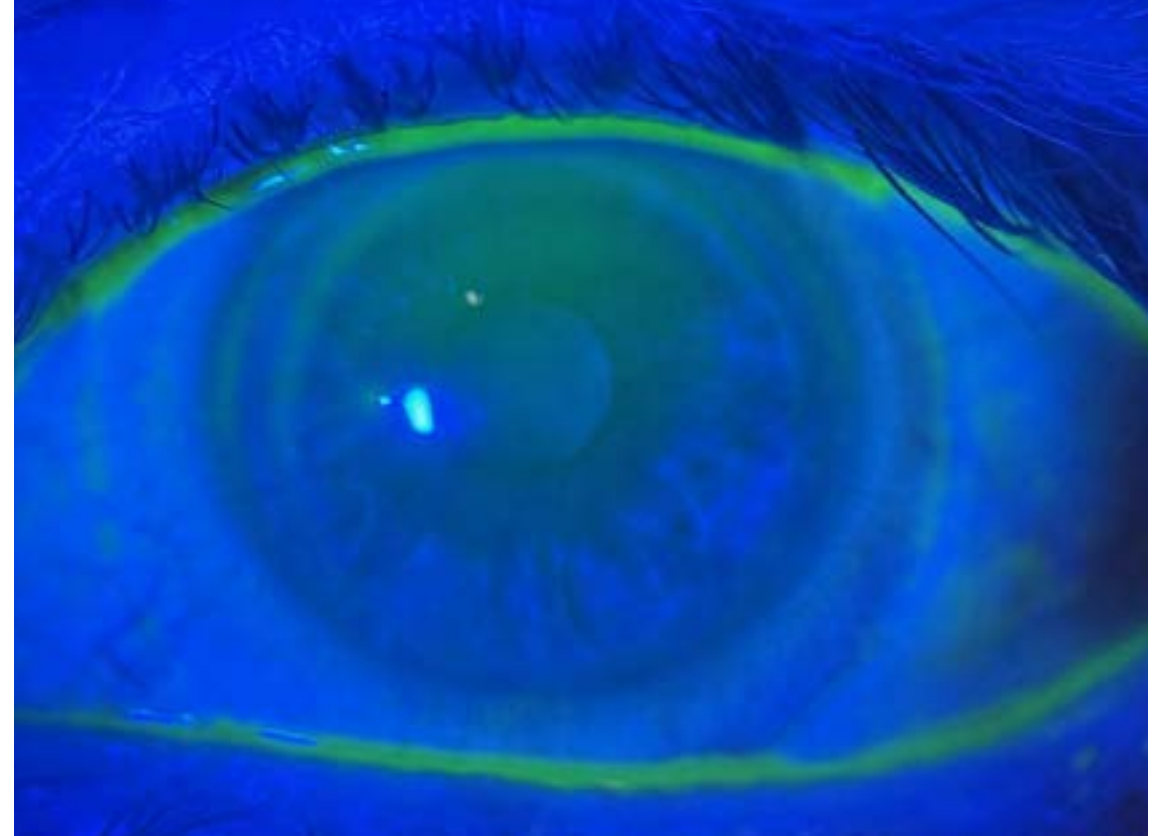
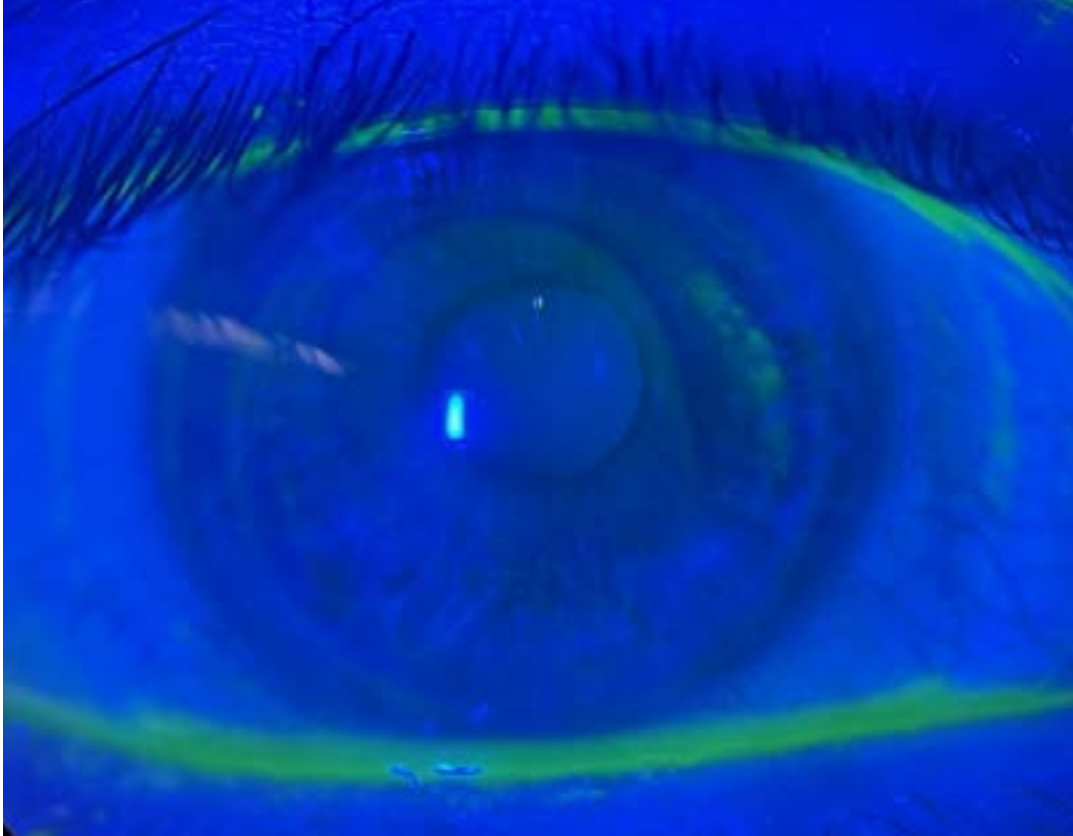
OCT: Not necessary but fun to look at!

Understand relationship with
junction in midperiphery

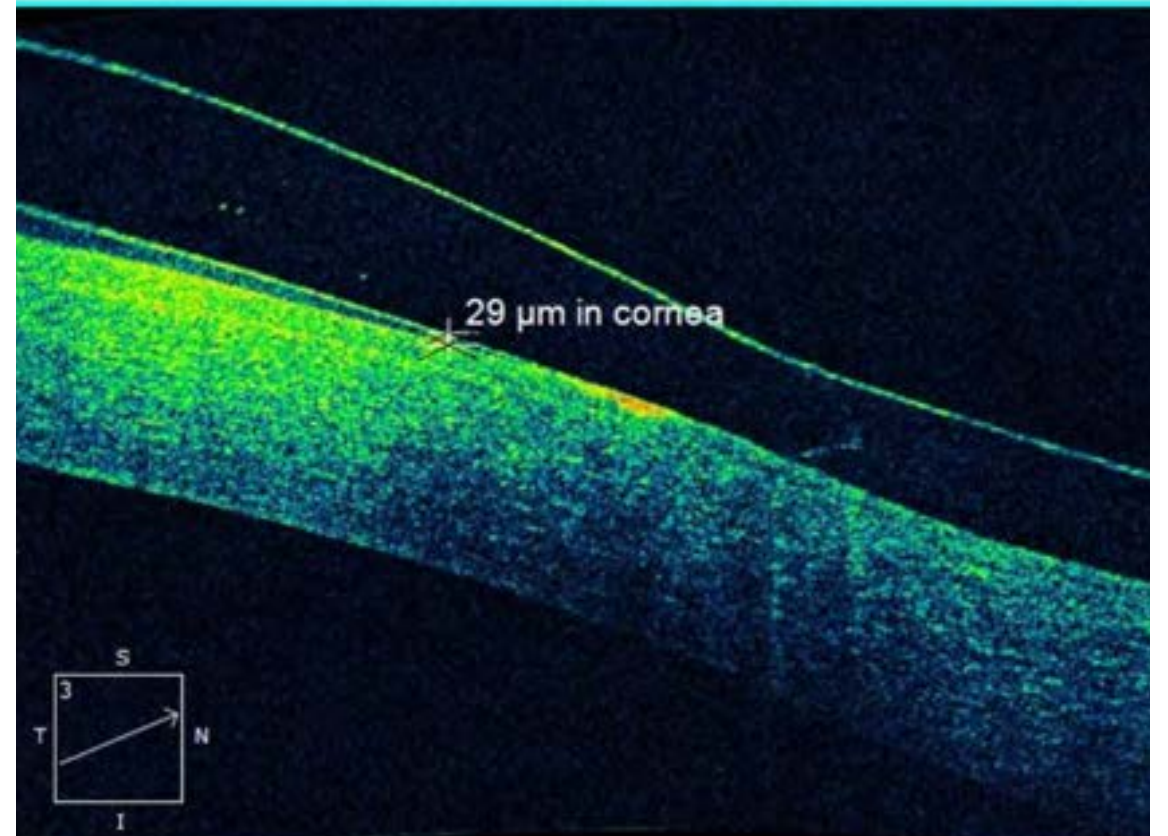
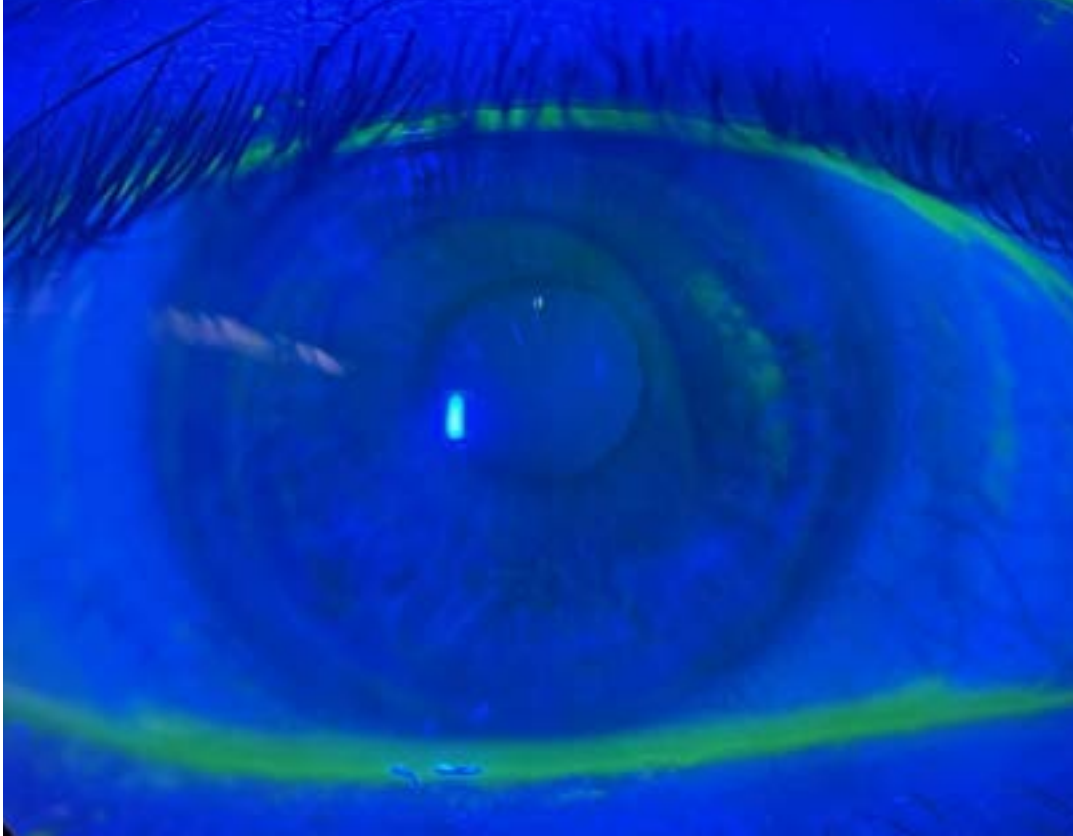
Understand relationship with
corneal limbus



Always remove lens, check for staining!



Always remove lens, check for staining!



Fit Like a
Soft Lens
After
Establishing
GP Base Curve



Assess Fit
Based on Comfort,
Movement and
Over Refraction



Happy
Patients
Long-Term
Success



**The
Persistent
Presbyope**

PATIENT BACKGROUND

- 52 yo, caucasian female who works in IT
- Ocular History: Dry Eye Disease (Cyclosporine 0.05% BID OU)
- Has tried several presbyopic SCL options – MF torics and monovision, scleral lenses (dropped out due to handling)
- Patient very motivated to be out of Spectacles



Image Courtesy of Dr. Ashley Wallace Tucker OD

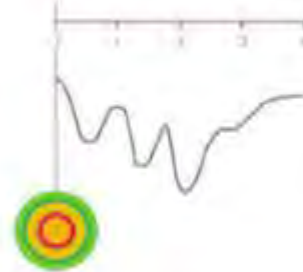
SynergEyes iD Multi-Focal EDOF

- Has a unique power profile that is non-monotonic and aperiodic.
- Unique combinations of Higher Order Aberrations are utilized to elongate the patient's depth of focus, for clearer vision at near, intermediate and distance.
- Linear skirt based on HVID

Power Profile is **non-monotonic and non-periodic**.
This unique power profile provides:

- **Good vision at all viewing distances**, minimizing visual disturbances like ghosting and haloes
- **Consistent performance** across pupils, decentration and individual's ocular aberrations

SynergEyes iD MF EDOF: Patented Optical Design Technology

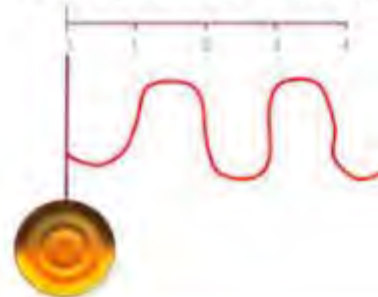


Continuously and rapidly varying power profile. Non-monotonic and aperiodic. Not a zonal bifocal, aspheric or diffractive.

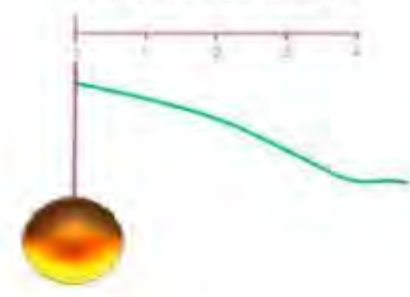
Illustrative power profile only.

Other Commercially Available Multifocal Designs

Zonal concentric lenses:
Periodic power changes discrete and wide zones of same power.



Aspheric lenses:
Monotonic progressive power change.

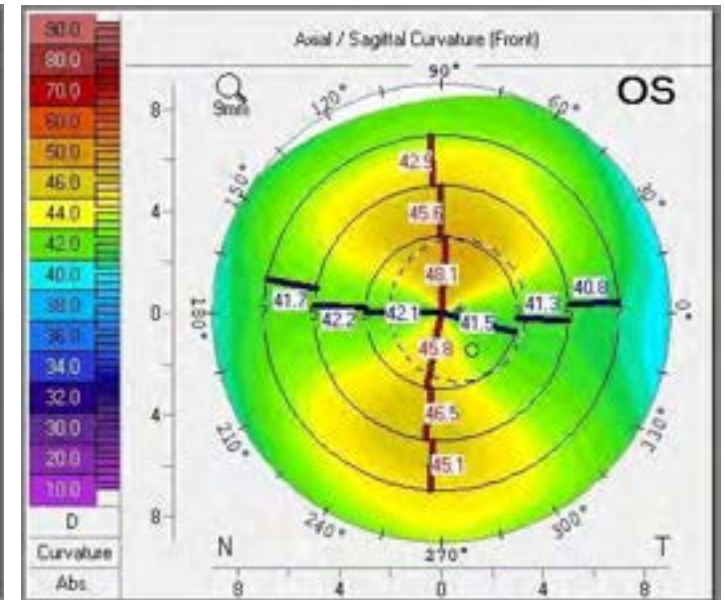
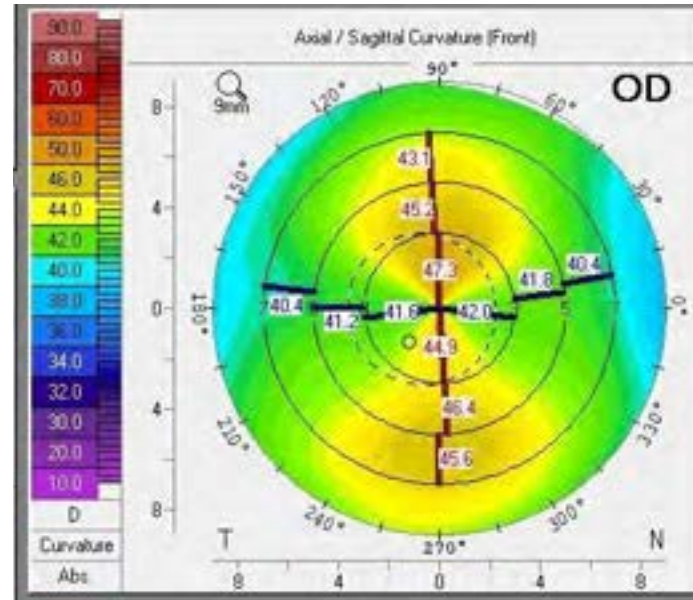


SynergEyes iD Multifocal EDOF Lens Parameters

Diameter	14.5mm
Skirt	38 to 49 in increments of 1 step to accommodate HVID range of 10.0 to 13.0mm. HVID outside the measurements will default to 10.0 or 13.0mm.
Base Curves	7.10mm to 8.30mm in increments of 0.01mm
Multifocal Lens Powers	+5.50 to -10.00D +5.50 to -8.00D in 0.25D steps -8.50 to -10.00D in 0.50D steps Add Power: Low, Medium, High

OBJECTIVE FINDINGS:

- Manifest Refraction:
 - OD +5.50-4.50x180 20/20
 - OS +5.00-4.50x177 20/20
 - Add: +2.00
- Keratometric Readings
 - OD 41.8 / 46.1 @ 89
 - OS 41.9 / 46.8 @ 81.2
- Horizontal Visible Iris Diameter
 - OD 12.0 mm
 - OS 12.0 mm



Ordering Process

- Used the Empirical Lens Calculator
- Easy and Efficient!
- Enhanced Profile automatically added to both eyes lens due to higher cylinder power
- Opted for Tangible HydraPeg (DED)

The screenshot displays the SynergEyes Empirical Lens Calculator interface. At the top, the SynergEyes logo is on the left, and the title "Empirical Lens Calculator" is in the center. Below the logo, there are radio buttons for "Both Eyes" (selected), "Right Eye (OD)", and "Left Eye (OS)".

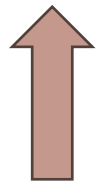
The interface is divided into two main columns for "Right Eye (OD)" and "Left Eye (OS)". Each column contains a dropdown menu for lens type (both set to "SynergEyes® iD MF EDOF"), a section for "Enter Keratometry Readings" with input fields for K1, K2, and HVID, and a section for "Enter Manifest Refraction (MR)" with input fields for Sphere, Cylinder, and Add Power. At the bottom of each column, there are checkboxes for "Additional Options" including "Enhanced Profile" and "Tangible Hydra-PEG", both of which are checked.

Field	Right Eye (OD)	Left Eye (OS)
Lens Type	SynergEyes® iD MF EDOF	SynergEyes® iD MF EDOF
K1	41.8	41.9
K2	46.1	46.8
HVID (in 0.01 mm steps)	12.0	12.0
Sphere	+5.00	+5.00
Cylinder	-4.50	-4.50
Add Power	+2.00	+2.00
Enhanced Profile	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Tangible Hydra-PEG	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Suggested Lens Parameters: SynergEyes® iD MF EDof

Base Curve	Skirt	Power	Add Power
7.59	46	2.75	High

Calculated Residual Astigmatism : -0.25



Suggested Lens Parameters: SynergEyes® iD MF EDof

Base Curve	Skirt	Power	Add Power
7.53	46	2.50	High

Calculated Residual Astigmatism : -0.50



DISPENSING VISIT

- PARAMETERS

- OD: iD MF EDOF BC = 7.59 SK= 46 Power = +2.75 Add = High
- OS: iD MF EDOF BC = 7.53 SK= 46 Power = +2.50 Add = High

- Visual Acuity

- Distance OD: 20/20- OS: 20/20- OU: 20/20
- Near: OD: 20/25 OS 20/25 OU: 20/20

- Bilateral with appropriate clearance and movement at dispense

**UH OH.....Something
went wrong!**



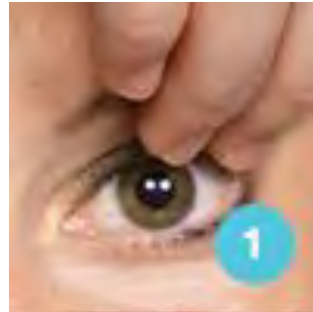
Insertion and Removal Tips



Inserter Method



Tripod Finger Method



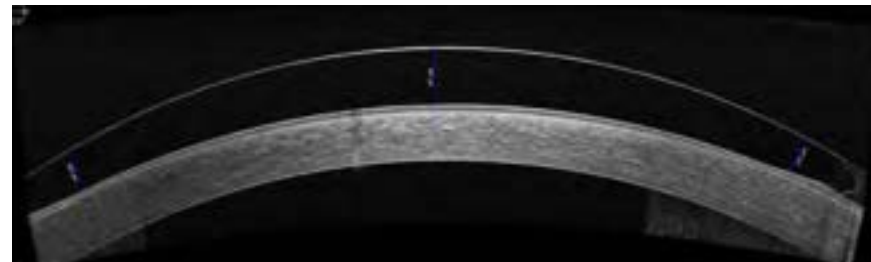
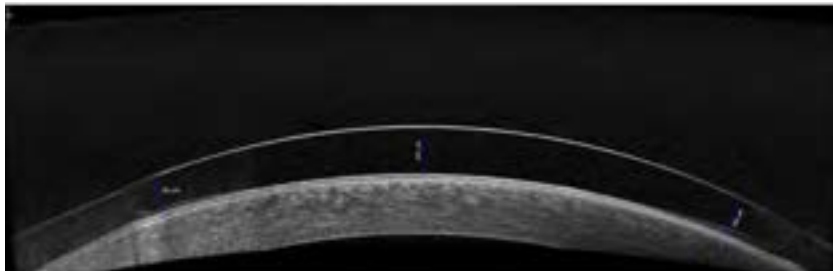
Lens Care Reminders

- Daily Cleaning: MPS or H₂O₂ based cleaner
- Filling Solution: PF Saline
- Rewetting Drops: PF only
- Replacement Schedule: every 6 months



FOLLOW-UP VISIT

- VA 20/20 Distance OU and 20/25 at Near
- Patient very happy!
 - OD: Over-refraction Plano
 - OS: Over-refraction +0.50 (pushing more plus) 20/20 Distance and Near
- Lens Settling
 - Poor central clearance and centration
 - Order: Steeper Base Curve and Increase SAG



OUTCOME/CLOSING COMMENTS

- Due to her high astigmatism:
 - Soft toric lens - dryness causing lens rotation, fluctuating vision
 - RGP - discomfort with lens awareness
 - Scleral lens - patient overwhelmed with insertion/removal
- The SynergEyes iD MF EDOF lens neutralized most of her corneal astigmatism which allowed her to not only have clear vision but also consistent vision!

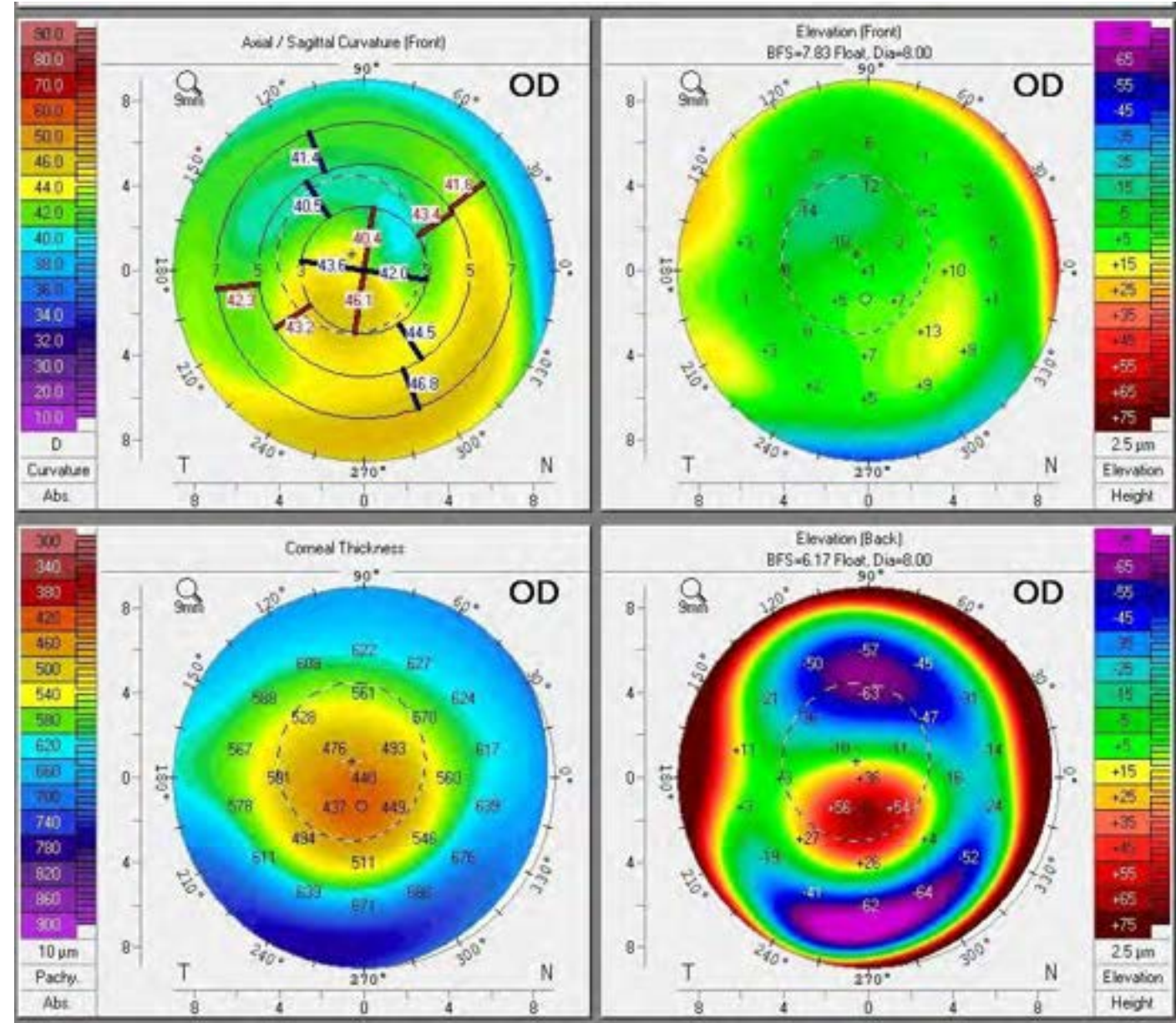
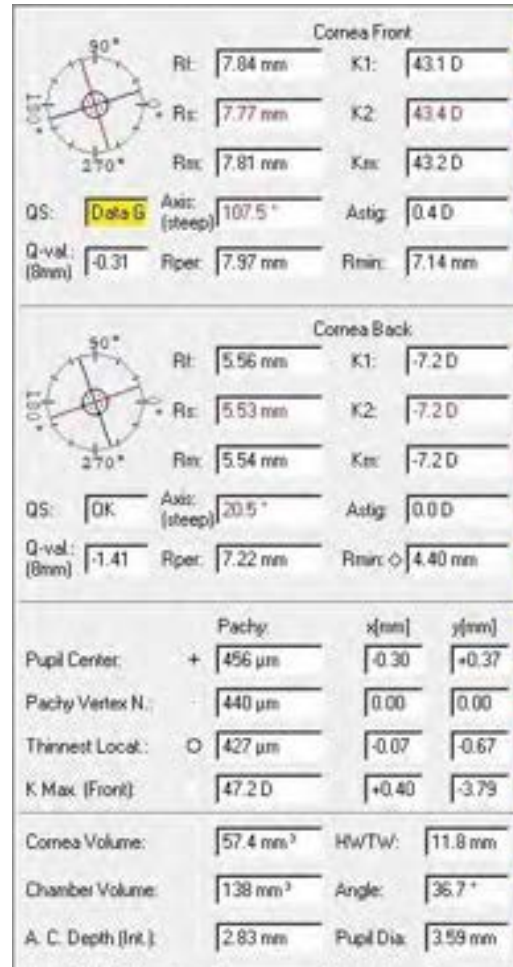


UltraHealth-y Cornea

Patient Background

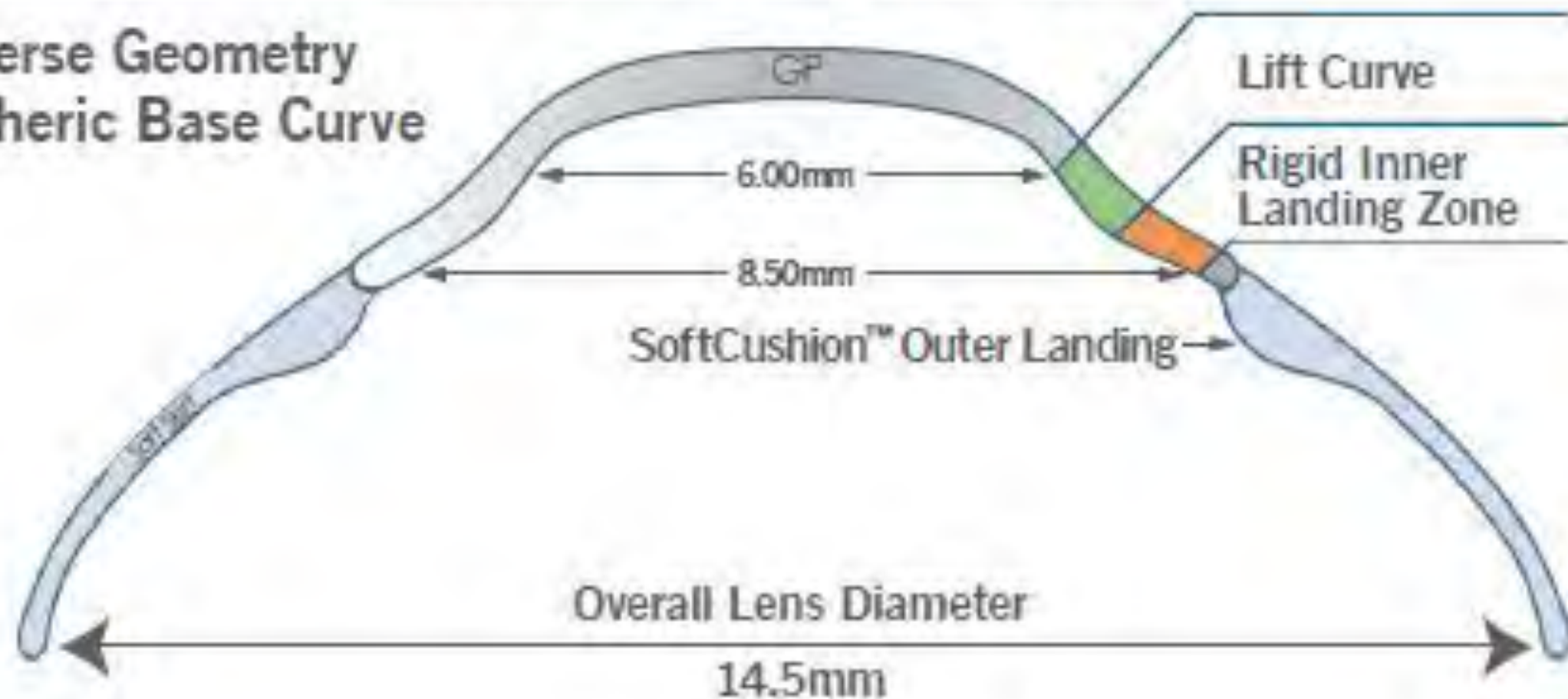
- 39 year-old Caucasian Woman
- Ocular history:
 - Moderate Keratoconus OU diagnosed at the age of 24
 - Chronic Allergic Conjunctivitis
 - Extensive, unsuccessful contact lens history
 - Soft toric contact lenses
 - RGPs
 - Sclerals - unable to tolerate OD due to rebound injection, successfully fit and comfortable in OS

Corneal Topography



UltraHealth Vaulted Lens Design

Reverse Geometry
Aspheric Base Curve



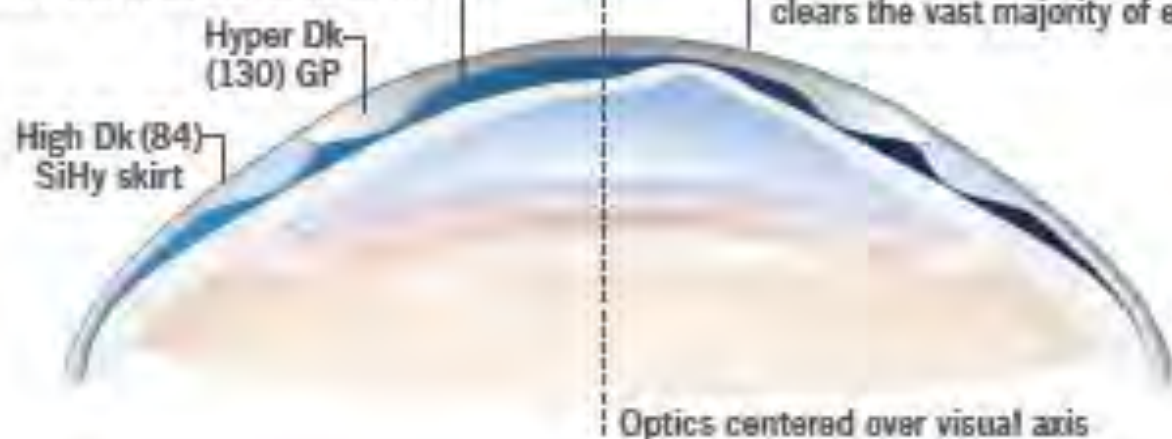
Diameter	14.5mm
Vault Values	50 to 550 in 50µ steps 8.7 Flat2 50-250
Skirt Curves	8.7 Flat2, 8.4 Flat, 8.1 Medium, 7.9 Steep
Lens Powers	+10.00 to -20.00D +10.00 to +2.50D in 0.50D steps +2.00 to -8.00D in 0.25D steps -8.50 to -20.00D in -0.50D steps
Materials	84 Dk SiHy skirt, 130 Dk GP center
Class II UV blocker	UVA and UVB

UltraHealth® Advanced Hybrid Design High Dk (84) SiHy Skirt & Hyper Dk (130) GP utilizing patented HyperBond® technology.

Aspheric Reverse Geometry Vaulted Lens Design

Optimized lacrimal lens results in lower powers and reduced aberrations

Reverse geometry, vaulted design clears the vast majority of ectasias



Advantages of HYBRIDS for Irregular Cornea

- Hybrid design provides superior centration compared to GP lenses.
- Stable platform keeps optics centered over visual axis.
- Rigid lens material neutralizes corneal irregularity.
- Optimized reverse geometry design results in lower lens powers and reduction of aberrations.
- Vaults over most ectasias without bearing to ensure corneal surface integrity.

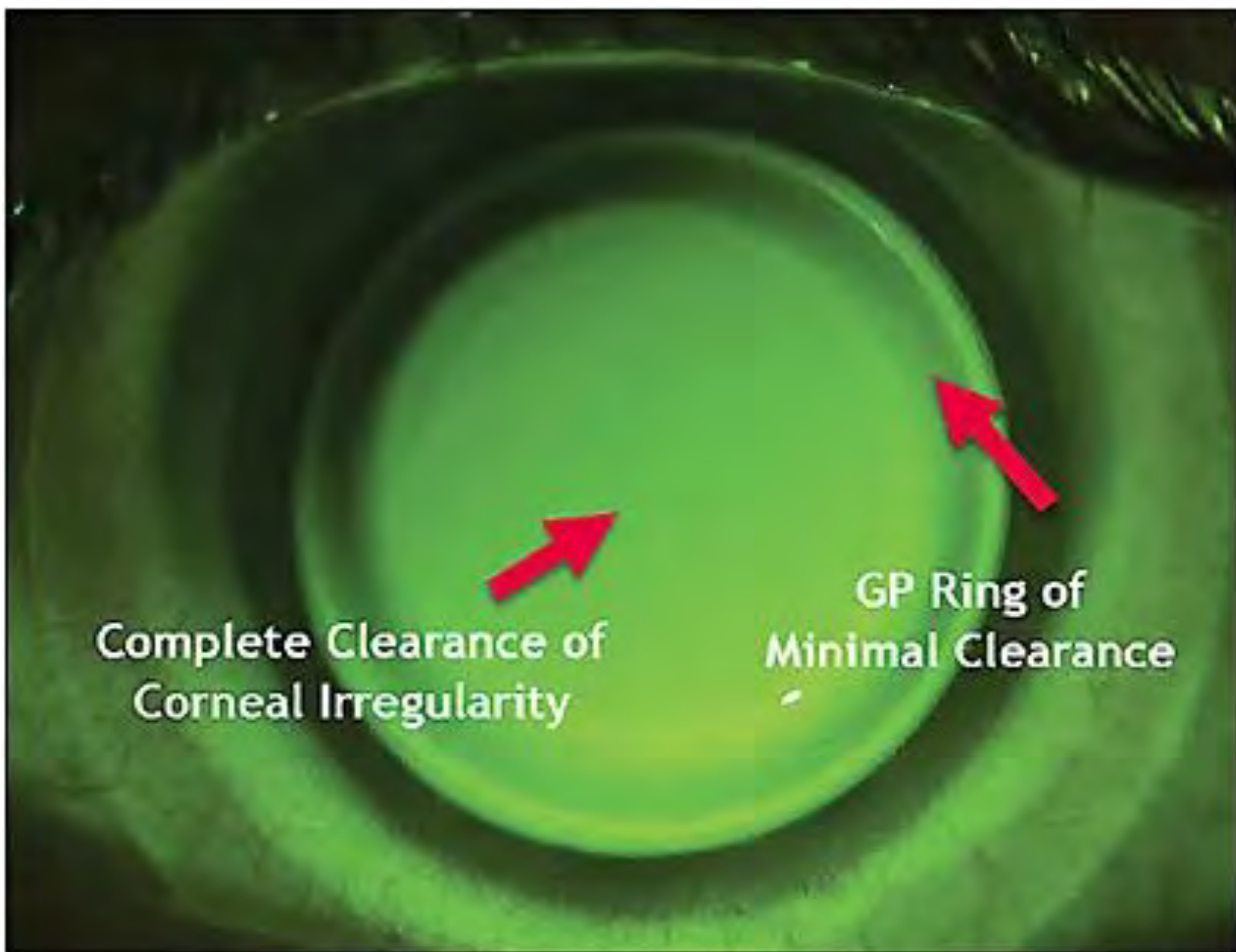
Call CONSULTATION!

- What's needed:
 - Best possible refraction
 - HVID
 - Topography
 - Keratometry Values
 - Eccentricity value



Dispense Visit

- OD: SynergEyes UltraHealth 150 Vault / 8.1 MED skirt / 14.5 DIA / -0.50 D.S.
- Visual Acuity
 - OD 20/20
- Great centration and appropriate movement and fit
- No rebound redness post lens removal



Complete Clearance of
Corneal Irregularity

GP Ring of
Minimal Clearance

Follow-up Visit

- VERY happy with the lenses BUT reported deposits on the lenses that could not be removed with digital rubbing



Problem SOLVED!

- Order one additional pair of lenses with Tangible HydraPeg
- This is a one-time coating that is added to the lens to help improve contact lens problems related to discomfort, dryness, fogging or deposits.
- Coating lasts the lifetime of the hybrid lens which is 6 months.
- Patient was instructed to continue use of a multi-purpose cleaner or hydrogen peroxide-based cleaner with the new lenses



Outcome

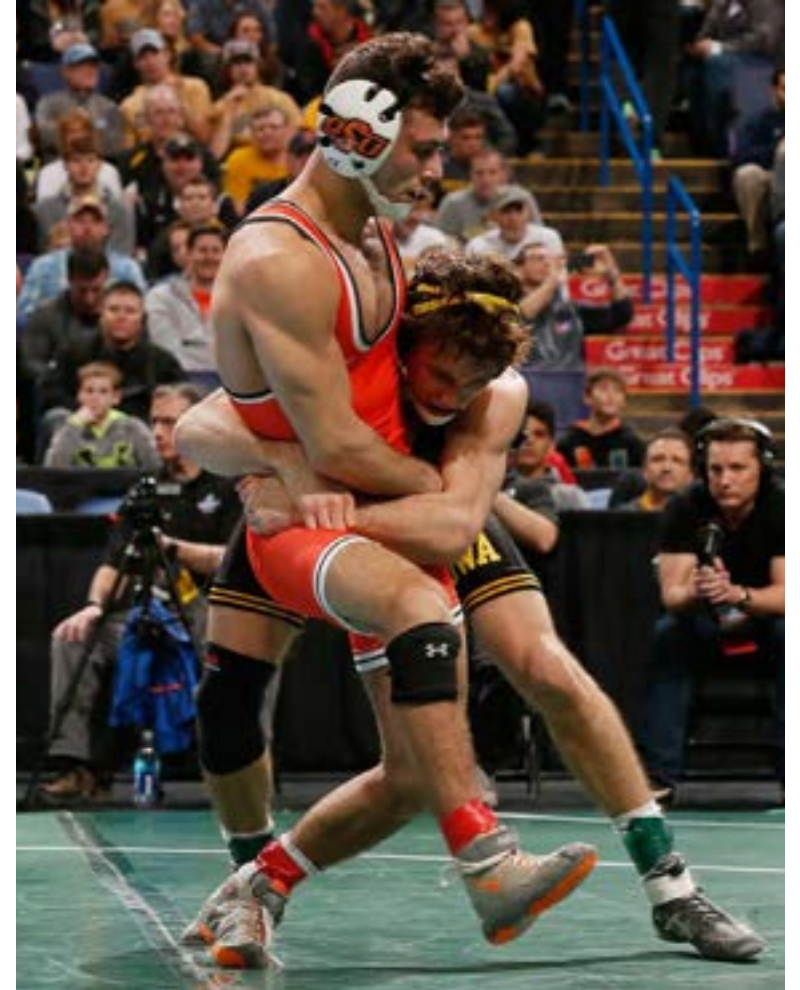
- May have seemed like a hopeless situation due to lack of success in most other options
- UltraHealth should be considered as a first line option for KCN and irregular cornea patients – SCLERALS aren't always best!



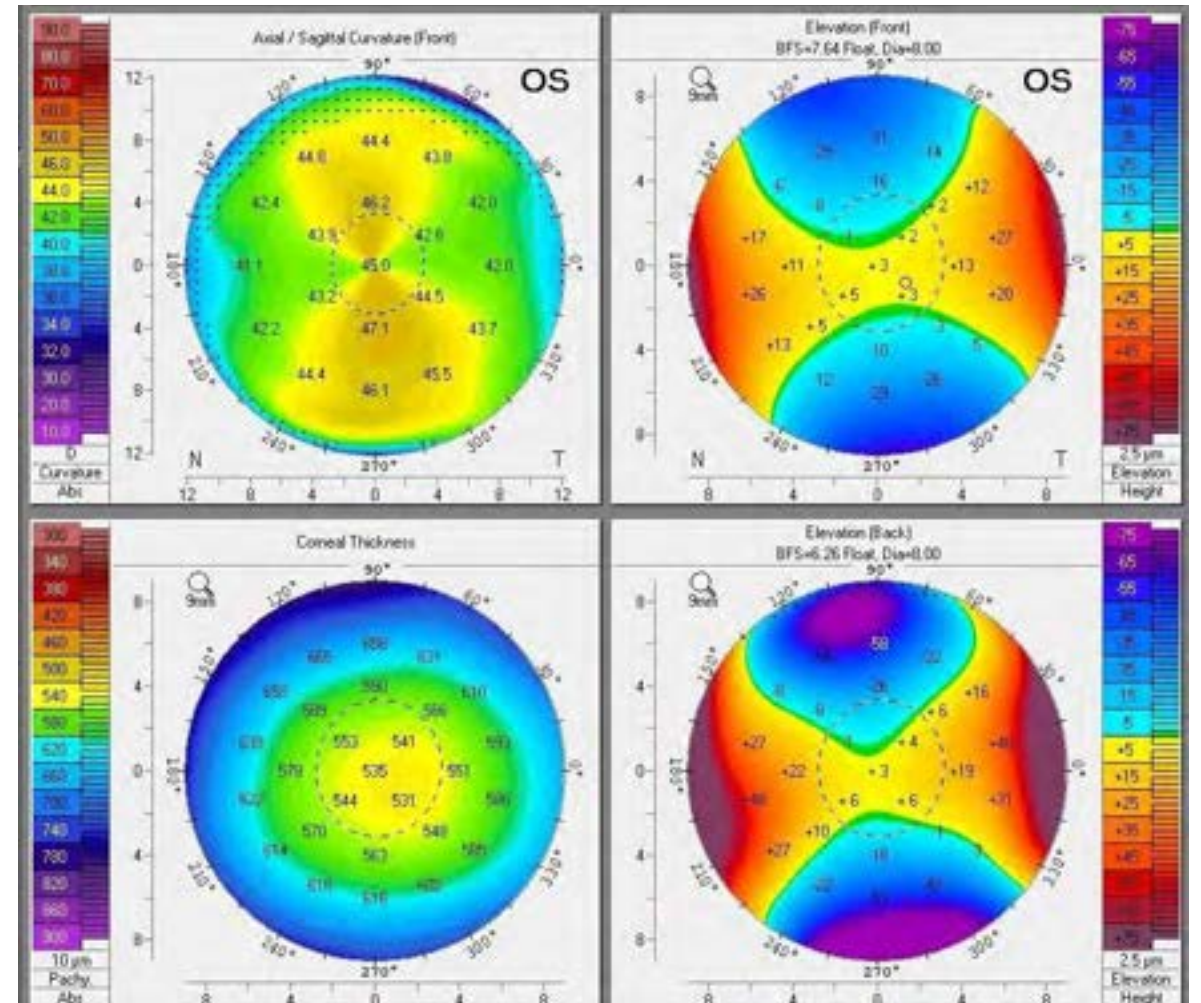
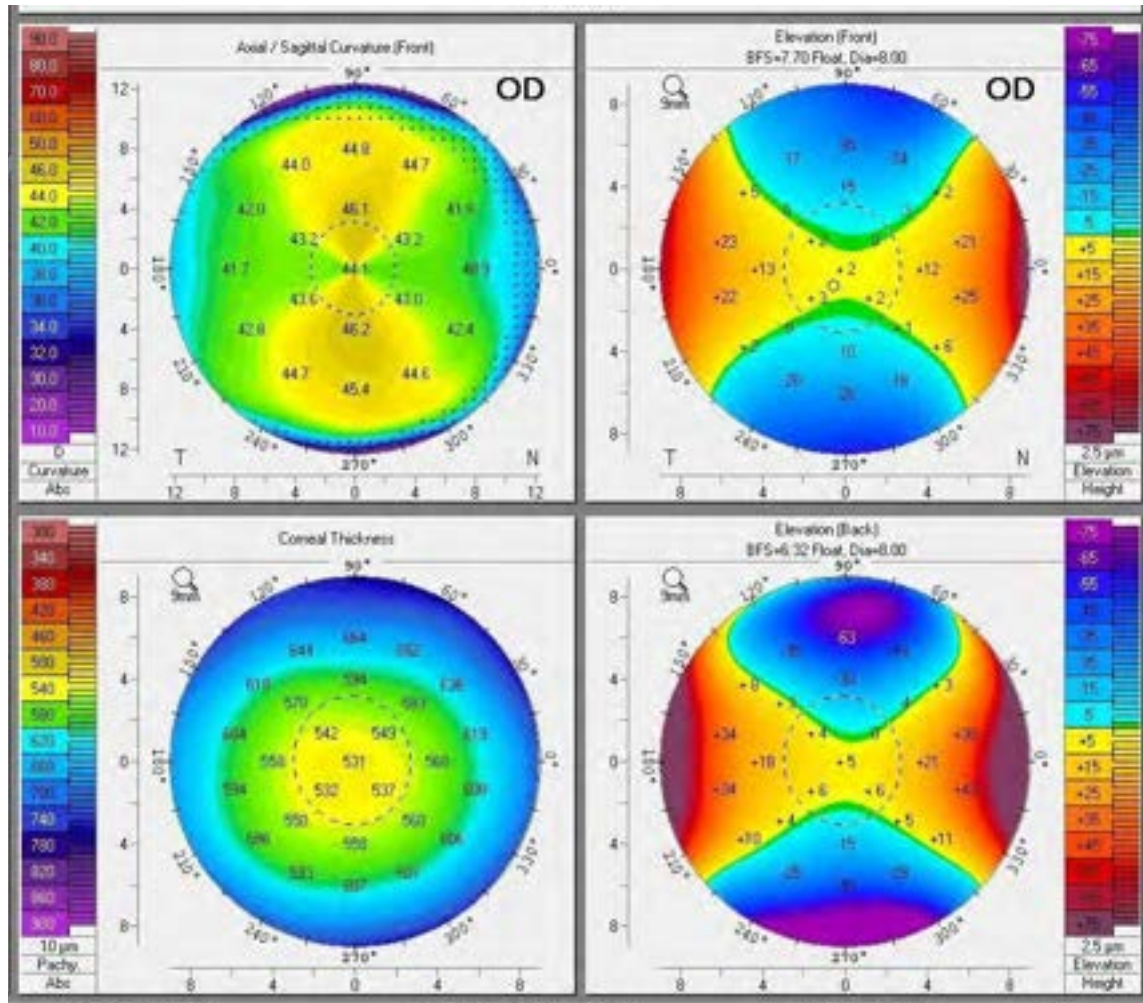
The Timing of Toricity

PATIENT BACKGROUND

- 16 yo asian male referred for Specialty Lens Fitting and Corneal Astigmatism monitoring
- Brother has KCN – pt has no signs of KCN but does have high cylinder with slight inferior>superior asymmetry
- Mild dry eye disease, using Artificial Tears BID OU
- Motivated for contact lenses due to wrestling
- Failed fit with soft toric lens options due to lens spinning/stability



Corneal Topography



Contact Lens Parameters

Manifest Refraction

OD -6.00-4.50x176 VA 20/30

OS -5.75-5.00x12 VA 20/30

Duette | Great Vision for Patients with Astigmatism
CONTACT LENSES

Diameter	14.5mm
Base Curves	7.1 to 8.3 in 0.1mm steps
Skirt Curves	8.7 Flat2, 8.4 Flat, 8.1 Medium
Lens Powers	+10.00 to -15.00D +8.00 to -8.00D in 0.25D steps +8.50 to +10.00D in 0.50D steps -8.50 to -15.00D in 0.50D steps
Materials	84 Dk SiHy skirt, 130 Dk GP center
Class II UV blocker	UVA and UVB

Duette® Advanced Hybrid Design High Dk (84) SiHy Skirt & Hyper Dk (130) GP utilizing patented HyperBond® technology.

Landing zone design enhances tear exchange & comfort

Hyper Dk (130) GP center

Tear lens optimizes vision

High Dk (84) SiHy skirt

Initial Lens Parameters

OD - 5.75 / Duette Enhanced Profile / 7.9 / Flat Skirt 8.4, HydraPeg VA 20/30

OS - 5.75 / Duette Enhanced Profile / 7.8 / Flat Skirt 8.4, HydraPeg VA 20/30

Contact Lens Adjustments

Follow-Up Visit:

Good comfort, awareness of lens

Clinical exam shows 1.5 mm of movement with blinking



New Lens Parameters

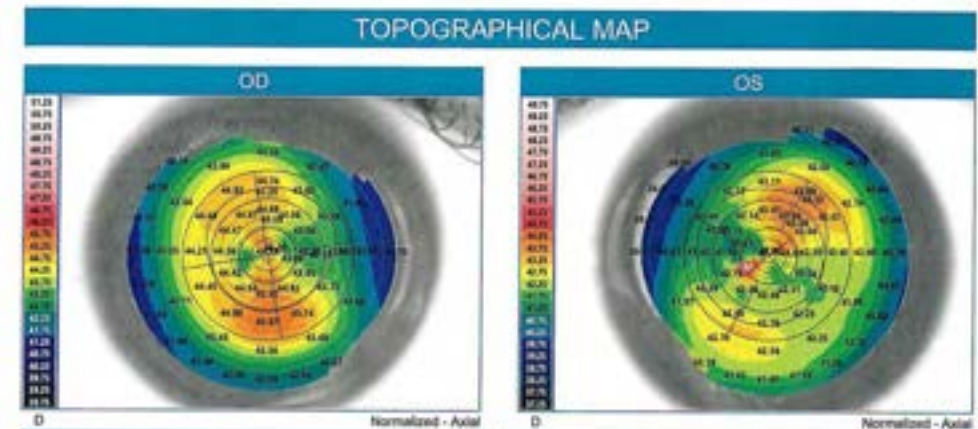
OD - 5.75 / Duette Enhanced Profile / 7.9 / **Medium** Skirt 8.1, HydraPeg VA 20/20

OS - 5.75 / Duette Enhanced Profile / 7.8 / **Medium** Skirt 8.1, HydraPeg VA 20/20

Topography Considerations

Corneal Warpage

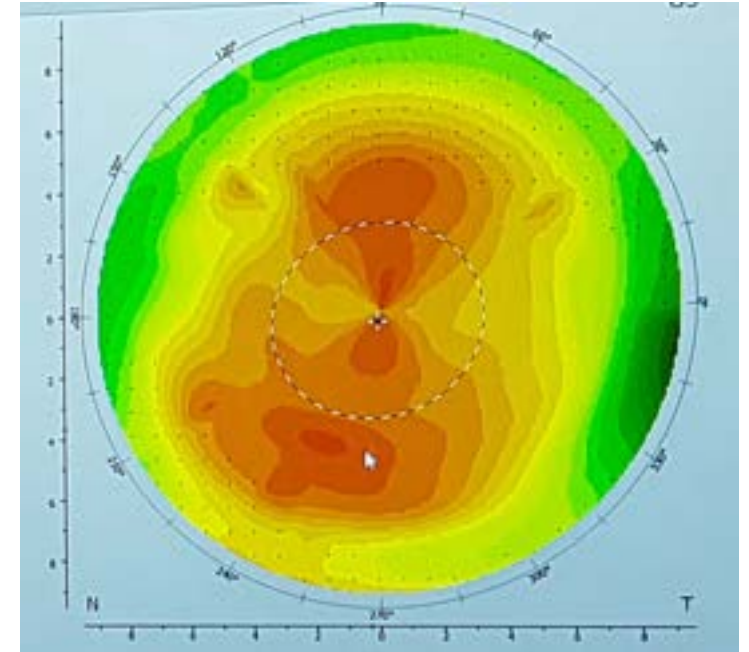
- Reversible distortion of corneal curvature due to mechanical effect of CL
 - Rigid Center = Mechanical Pressure
 - Soft Skirt = Hypoxic Stress (if low Dk or ill fitting)
- Monitored by Topography
 - Corneal Ectasia (Keratoconus) = epithelial thinning
 - Corneal Warpage = epithelial thickening
- Complicate the monitoring of progressive conditions



Topography Considerations

Back to the case...

- Patient has risk factors to be monitored for risk of Keratoconus
 - Family history, age, level of astigmatism, dry eye disease
- Recommendation: Do not monitor image cornea immediately post lens wear
- Optimal waiting period to take topography after hybrid lens wear depends on lens wear and lens fit
 - Majority of cases, cornea may stabilize after 1 week of discontinuation




Patient's topography was taken post 48 hours of discontinuing Hybrid Lenses

Today, at the age of 22, he is stable and shows no signs of KCN

Outcome

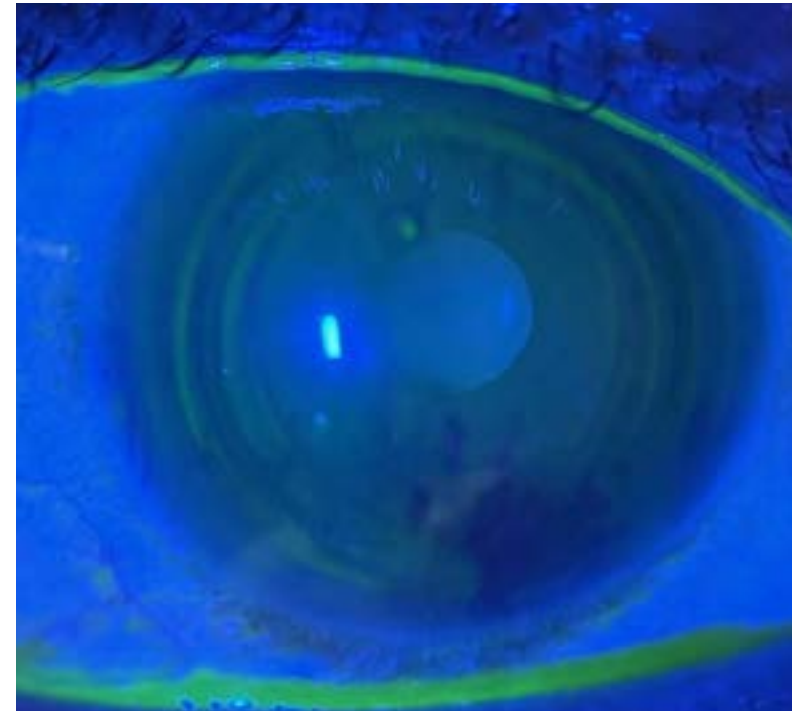
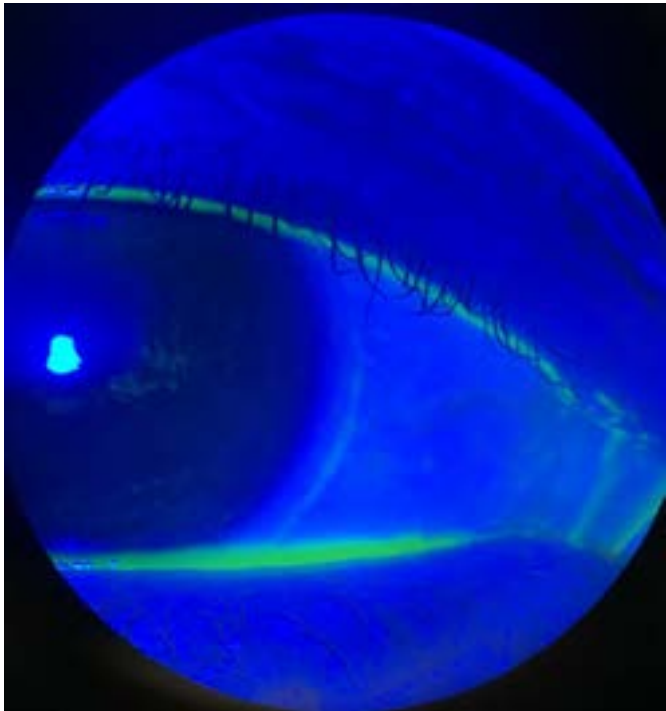
- Rigid lens optics can influence corneal topography and tomography measurements
- Be intentional on the choice of lens for monitoring progressive conditions
- Communicate clearly expectations and lens removal timeline for corneal imaging



The Horrors of Hypoxia

Corneal Hypoxia

- Corneal Neovascularization
- Rebound circumlimbal injection post lens removal
- Conjunctival staining of skirt



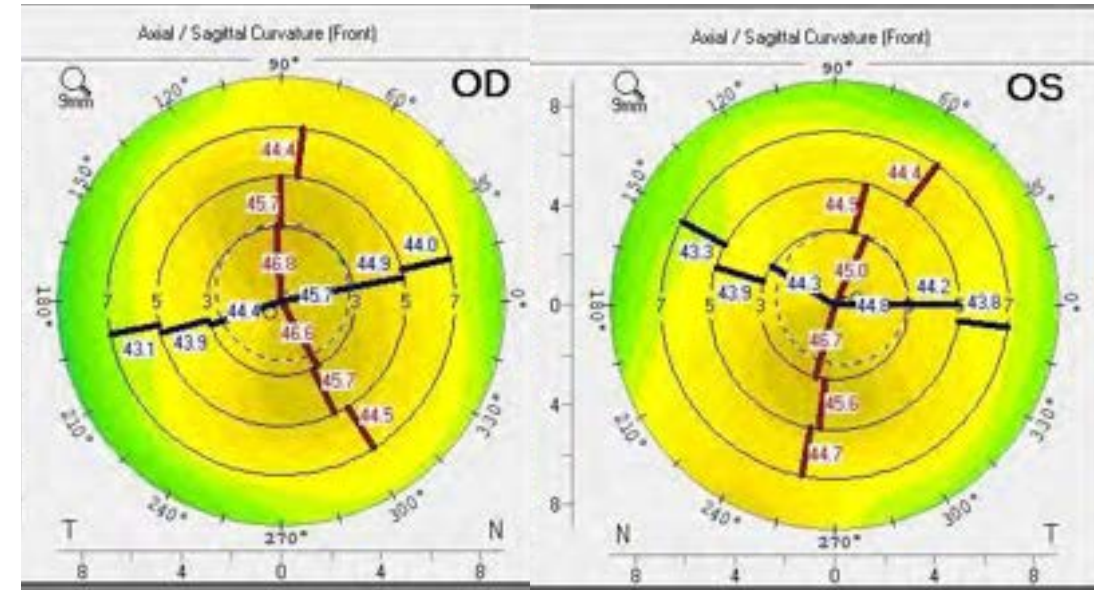
Corneal Hypoxia

- Poor Oxygen Permeability (Dk) due to soft skirt
 - Generally lower than the RGP center
- Tight fitting skirts
 - Due to poor fit
 - Due to lens overwear
 - Dry Eye Disease
- Poor compliance with replacement (every 6 months)

Case

- 27 year old high myopia, dry eye disease, myopic retinal degeneration

MRx OU -32.50-1.50x180 VA 20/40



Contact Lens History:

- Initially wore soft custom CLs + Spec Rx over top
- Transitioned to RGP; dropped out after 1 episode of decentration while driving
- Unable to insert Scleral Lenses
- Fit with Hybrid Lenses:
 - SynergEyes A -25.00 BC 7.30 Skirt 8.30 VA 20/40
 - Dk 100

Case - 2 Years Later

- Good comfort, fit and vision with Hybrid Lenses
- AWT: 16 hours per day
- Unable to refit into higher Dk (Duette) due to power limitation (>20 D)
- Clinical Findings: worsening dry eye disease, conjunctival staining and keratinization under landing zone of skirt, corneal neovascularization
- No improvement with therapeutics
 - 0.05% Cyclosporine
 - Perfluorohexyloctane BID



Case: Next Steps

- Referred for refractive surgery in order to reduce contact lens dependence
- s/p ICL OU
- End refractive result:

MRx OD -12.00+2.50x95, OS -10.25+2.50x88

- Contact Lens Rx (Daily Disposable Brand)

OD -8.00-2.25x010, OS 7.00-1.75x180 with wear time limited < 8h/day

- Ocular Surface Disease Managed with Topical Dry Eye Therapy (Cyclosporine 0.05% BID and Perfluorohexyloctane BID)



Outcome

- Importance of routine follow-up (every 6 months)
 - Monitor both the hybrid lens fit AND the ocular surface
- Always remove the lens and check for corneal and conjunctival staining
- When indicated, therapeutically TREAT the ocular surface
- Always weigh the risk of contact lens wear VS surgical refractive options

Final Clinical Pearls

- Add 2-3 drops of a low to mid viscosity preservative free drop within the bowl
 - Improves comfort upon application
 - Fills in pockets of air
 - Cushions the eye



- For complex corneas, don't always jump to a scleral!

- Try both the tripod method and the plunger method.
 - Not quite like a soft lens or a scleral.
 - Be patient!



- Don't use this lens a last resort option - so many patients can benefit from it!

THANK YOU!!!

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On behalf of Vision Expo, we sincerely thank you for being with us this year.

Vision Expo Has Gone Green!

We have eliminated all paper session evaluation forms. Please be sure to complete your electronic session evaluations online when you login to request your CE Letter for each course you attended! Your feedback is important to us as our Education Planning Committee considers content and speakers for future meetings to provide you with the best education possible.

