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SECO Contact Lens Summit A Day In The Life of a CL Expert: Cases To Make You Laugh Or Cry-

Moderator: Milton Hom, OD
Panelists: Jenn Harthan, OD
Ashley Wallace-Tucker, OD
Aaron Zimmerman, OD

Please Silence All Mobile Devices.

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Milton Hom, OD

Disclosures:
AbbVie/Allergan
Aperta Biosciences
Bruder
Surface Pharma
Tarsus Pharma
Tenpoint

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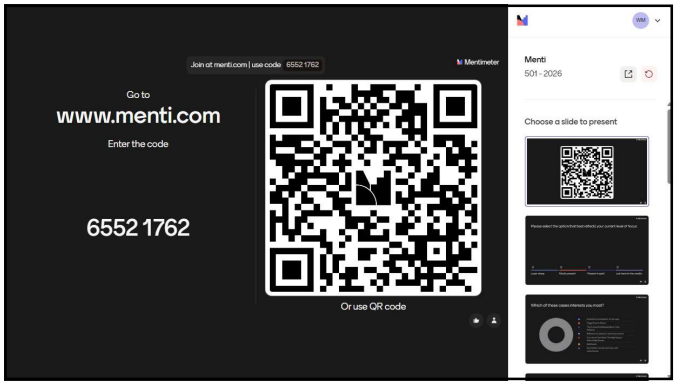

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Audience poll
Please select the option that best reflects your current level of focus:

A. Laser-sharp
B. Mostly present
C. Present in spirit
D. Just here for the credits

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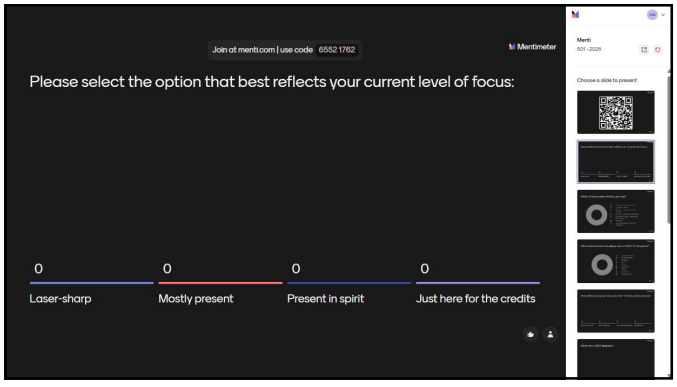

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Welcome to SECO 2026

- CL Summit Agenda
  - Case presentation selection
    - Polling determines order of cases presented
  - Each case presentation ends with Q&A
  - Polls throughout the program
  - Speaker introductions

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Jenn Harthan, OD

Disclosures:
AbbVie/Allergan
Alcon
Art Optical
Bausch + Lomb
Contamac
Epion
Euclid
GP Lens Institute
International Keratoconus Academy
Metro Optics, Inc.
Tarsus

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Ashley Wallace-Tucker, OD, FAAO, FSLS

Disclosures:
Bausch + Lomb
CooperVision
Topcon
Visionary Optics

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Aaron Zimmerman, OD, MS, FAAO

Disclosures:
Acuity International
Alcon
American Academy of Optometry
American Optometric Association
TearOptix
Wolters Kluwer

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Audience Poll:
Which of these cases interests you most?

1. Scleral lens consultation for dry eyes
2. Foggy Days in Athens
3. The Cornea That Needed More Than Patience
4. Referral: CL fitting for vision improvement
5. Too Late to Turn Back: The High Myope I Wish I'd Met Sooner
6. Multifocals
7. Eye irritation and blurred vision with scleral lenses

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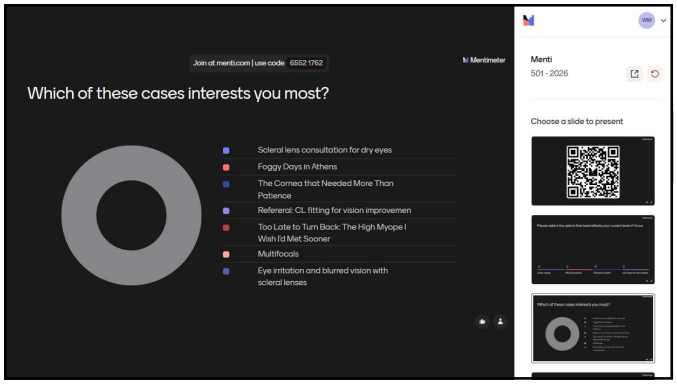

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Case 1:
Scleral lens consultation for dry eyes

Illinois Eye Institute, Illinois College of Optometry
Jennifer Harthan, OD, FAAO, Dipl CCLRT, FSLS, FNAP

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42yo WF - Scleral lens consultation for dry eyes OU

Habitual scleral lenses are causing discomfort.

History:
- ectodermal dysplasia with malformation of nasolacrimal ducts OU
  - "Born with no tear ducts": h/o of dacryocystorhinostomy OU in 1985
- H/o herpes zoster keratitis OU in 2017 with resultant corneal scarring OS > OD

Sees her ophthalmologist every 2-3 months

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Current treatment

Previously used artificial tears over the lenses but caused fogging
Preservative free ointment qhs OU
Moxifloxacin eyedrops and neomycin ointment to use when she "feels a flare-up coming"
Warm compresses with a warm towel PRN OU
Eyelid cleanser PRN OU
Sleeping mask
Pilocarpine HCL 5mg po BID

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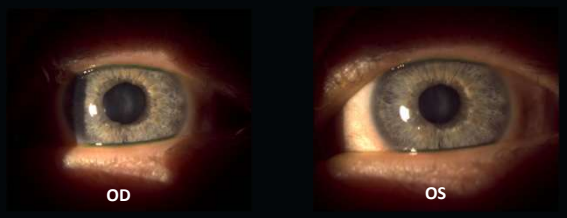
Slit lamp exam

Madarosis, inflamed lid margins and conjunctiva, central corneal scarring/thinning



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Poll Question - What treatment option would you consider NEXT for this patient?

- Low level light therapy
- IPL
- Amniotic membrane
- Doxycycline
- Lipiflow
- Lotilaner
- Cyclosporine
- Lifitegrast
- Scleral lenses
- Autologous serum

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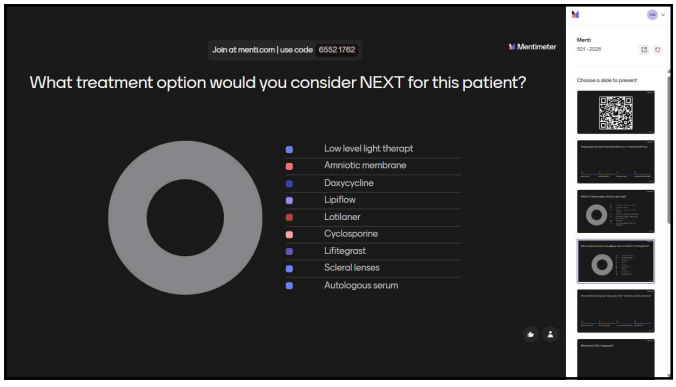

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Current lenses

Wear time: 15 hours per day, 7 days per week
Disinfecting solution: alternates between GP MPS and Hydrogen Peroxide
Filling solution: sodium chloride inhalation solution with a drop of gel eyedrop

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New lenses

Quadrant specific, increased sag, increased diameter to 17.0 mm

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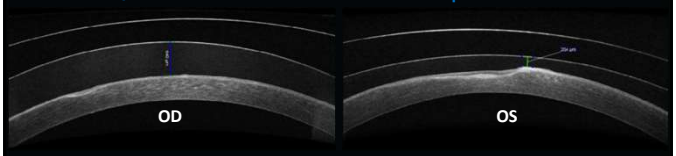
New Lenses – 17.0mm sclerals

640 µm of clearance **204 µm of clearance**



Material: Optimum Extreme (Dk: 125)

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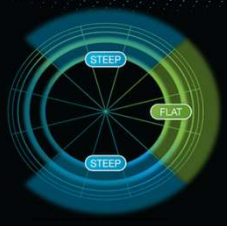
After 2 months of wear

- Changed fill solution
- Punctate staining fully resolved
- Eyes feel comfortable



This case highlighted:
- **Larger diameter** lenses
- **Quadrant specific** design

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Case 2:
Eye irritation and blurred vision with scleral lenses

Illinois Eye Institute, Illinois College of Optometry
Jennifer Harthan, OD, FAAO, Dipl CCLRT, FSLS, FNAP

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56yo WM – eye irritation and blurred vision

Eye pain OD>OS with habitual scleral lenses.

History:
- EEC syndrome (ectrodactyly, ectodermal dysplasia, and orofacial clefts)
- Limbal stem cell deficiency, dry eyes, and severe primary open angle glaucoma

- S/p superficial keratectomy with MMC OS in December 2022
- H/o persistent epithelial defect OS

23

Current treatment

Artificial tears PRN OU
Preservative free ointment qhs OU
Serum tears (20%) bid OU

Glaucoma medications: topical

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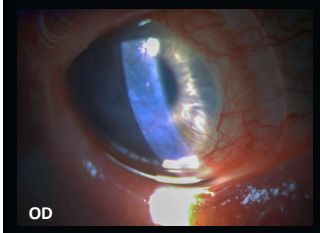
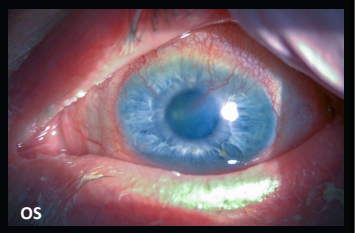
Slit lamp with current scleral lenses

Irregular/thickened lid margins with telangiectasia, madarosis, diffuse conjunctival injection, corneal stromal haze, neovascularization involving the visual axis





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New Lenses

- **Custom, impression-based scleral lenses were ordered**
  - **Material**: Optimum Extreme (DK: 125)
  - **Surface coating**: PEG based coating
  - **Diameter**: 16.5 OD, 16.0 OS (patient had shortened fornices)

Other changes:

- **Serum tears:** increased to 50% vitamin A potentiated serum tears
- **Added Vitamin A ointment** qhs OU

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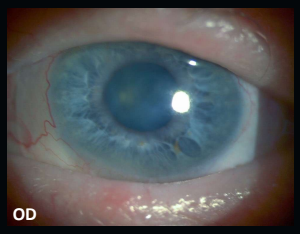
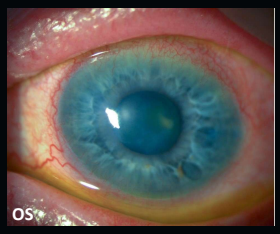
After 1 month of wear

Reduction of ocular inflammation and regression of corneal neovascularization





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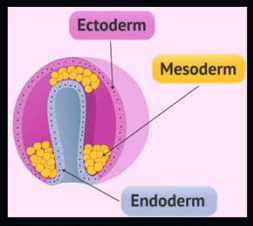
Ectodermal Dysplasia

A group of genetic conditions in which certain parts of the body that develop from the ectoderm do not form properly.

- **Hair**: thin, sparse, or absent
- **Teeth**: fewer or underdeveloped
- **Sweat glands**: inability to sweat properly
- **Eyes**: eyelid abnormalities



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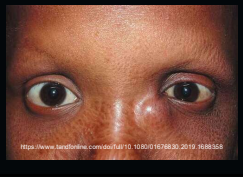
Ocular Findings

- Ankyloblepharon
- Lacrimal drainage obstruction and hypoplasia
- Punctal agenesis / atresia
- Distichiasis
- Trichiasis
- Meibomian gland alterations



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Key Points

- Scleral lenses maintain a **protective** fluid reservoir between the lens and ocular surface, and can be used **in conjunction with other treatments**, such as autologous serum tears
- Scleral lenses effectively address **multiple** concurrent ocular issues
- Achieving an accurate fit can significantly enhance long-term comfort, wear duration, and overall **quality of life**
- Advanced scleral lens **customization** can improve comfort and wear time
- Daily wear of adequately fitting scleral lenses protects the ocular surface while retaining visual function in patients who would otherwise be in constant discomfort

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Case 3:
Referred for CL fitting for vision improvement

Illinois Eye Institute, Illinois College of Optometry
Jennifer Harthan, OD, FAAO, Dipl CCLRT, FSLS, FNAP

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42yo HF – referred for contact lens fitting

Referred for CL fitting for vision improvement.

History:
- Longstanding reduced vision OD>OS
  - Was told her right eye was 'lazy'
- Tried contact lenses a long time ago
  - Difficulty with A&R
  - Did not notice significant improvement in VA

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Entrance Testing & Slit Lamp Findings

OD		OS
20/250 PH: 20/80	Entering BCVA	20/20
+5.50-8.00x160	Manifest Refraction	+0.50-1.25x175
14mmHg	Intraocular Pressure	16mmHg
Clean and Clear	Adnexa / Orbit	Clean and Clear
No abnormalities	Lacrimal	No abnormalities
White and Quiet	Conjunctiva / Sclera	White and Quiet
All layers Clear	Cornea	All layers Clear
Trabecular Meshwork	Gonioscopy	Trabecular Meshwork
All layers Clear	Lens	All layers Clear
Clear and Quiet	Vitreous	Clear and Quiet
Pink and Perfused	Optic Nerve	Pink and Perfused
Flat and Intact	Macula	Flat and Intact
Normal course and caliber	Retina Vessels	Normal course and caliber
Flat and Intact	Retinal Periphery	Flat and Intact

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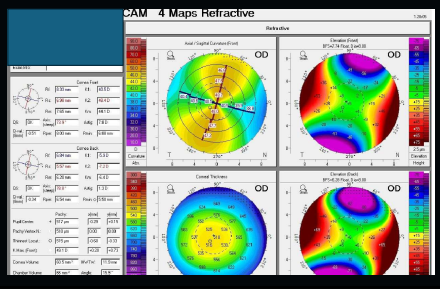
Corneal Tomography –
Revealed almost eight diopters of limbus-to-limbus corneal astigmatism OD



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Initial Diagnostic Scleral Lens Fitting

- Both small and large diameter lenses with toric landing zones were attempted
- The small diameter lens with a toric landing zone would not stay on the eye
  - Became dislodged immediately after lens application
- The large diameter scleral lens with toric landing zones showed significant edge lift off in the vertical meridian in primary gaze immediately upon lens application

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Audience poll: What additional technology may be beneficial in fitting this patient's scleral lens?

1. Anterior segment OCT
2. Corneal topography
3. Corneo-Scleral Profilometry
4. Optical Biometry

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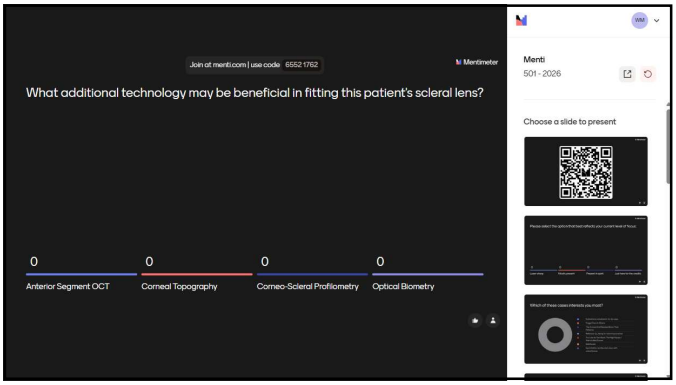

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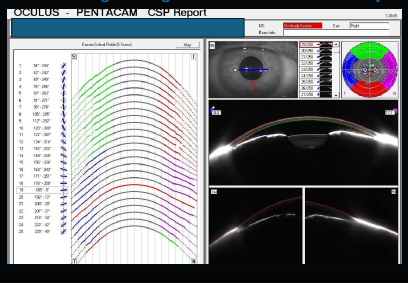
Corneo-Scleral Profilometry

>1200 microns of sagittal height difference between the major meridians



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New Lenses

- At a 16.8mm diameter chord, the patient had 1,101 microns of toricity
  - why **none of the diagnostic lenses would stay on the eye**
- Parameters of image-guided scleral lens OD:

Base curve (mm)	Lens diameter (mm)	Power (DS)	Landing Zone	BCVA
7.85	16.8	-2.00	+2/-9	20/30+

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Corneo-Scleral Profilometry

- Can supplement the traditional process of SL fitting with diagnostic sets
- Beneficial for patients with corneal and scleral irregularities
- May help provide a best-fit lens that matches the ocular surface
- May improve patient outcomes

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Key Points

- Scleral lenses can be **effective** for treatment and visual rehabilitation for patients
- Only **5-6% of patients have <300um** difference in scleral elevation
- Profilometry-guided scleral designs may be an option for patients with high corneal and scleral toricity **when other options fail**
- Profilometry-guided scleral lenses may ultimately **improve patient's comfort and quality of vision**

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Case #4: The Cornea That Needed More Than Patience

Ashley Wallace-Tucker, OD, FAAO, FSLS

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Patient Details

- 50-year-old Hispanic female
- KCN – diagnosed at age 16
- PKP OD 3 years prior, OS 5 years prior
- Type 2 DM x 10 years
- New diagnosis of Sjogren's syndrome x 6 months
- Scleral lens wearer x 1 month

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Medications

- Metformin
- Pred Forte qhs OU
- Restasis BID OU
- PF ATs several times/day
- PF gel qhs prn

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What's going on TODAY?

- Reports extreme light sensitivity after OD lens removal 2 weeks prior with mild to moderate pain
- Went to urgent care the next morning
- Was told she had a corneal abrasion and instructed to use PF ATs several times per day but not getting better

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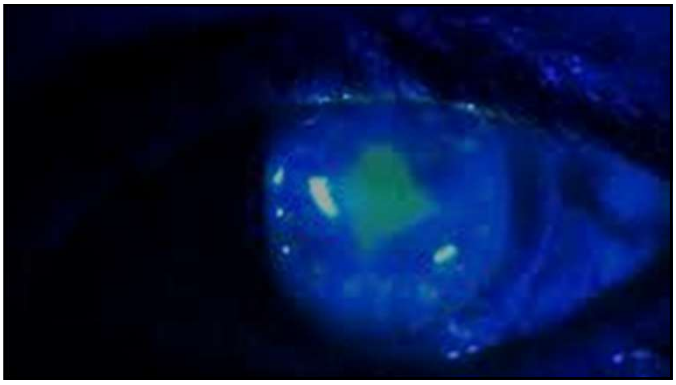

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Audience poll (word cloud): What's the LIKELY diagnosis?

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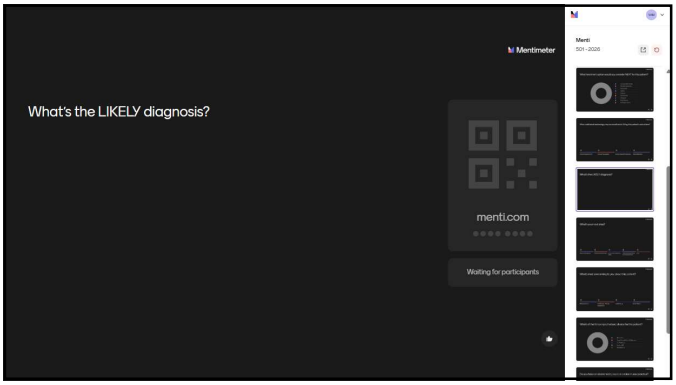

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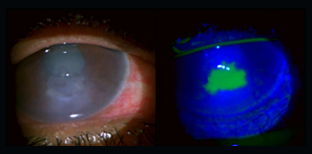
PED: Definition



- Corneal epithelial wound that fails to heal after ~10–14 days despite appropriate therapy
- Reflects a breakdown in normal epithelial migration, adhesion, or trophic support
- Carries a high risk of infection, stromal melt, and scarring if not addressed promptly

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Clinical Pearl

- Every PED requires a corneal sensation check.
- Reduced sensation = treat as NK until proven otherwise.

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Work-Up Essentials

1. Check corneal sensation (cotton wisp)
2. Evaluate lids/blink/exposure
3. Review topical meds for toxicity/preservatives
4. Rule out infection (culture if atypical, infiltrate, worsening pain)

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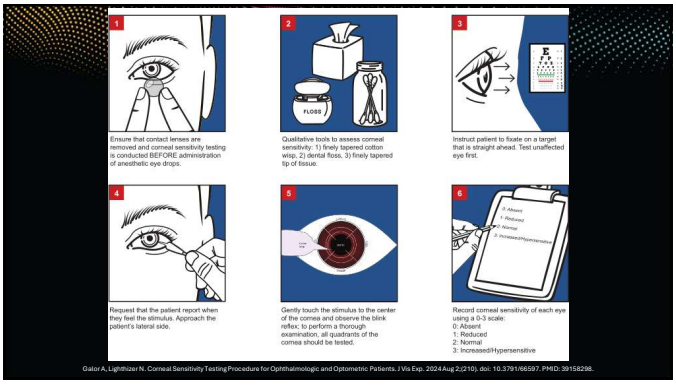

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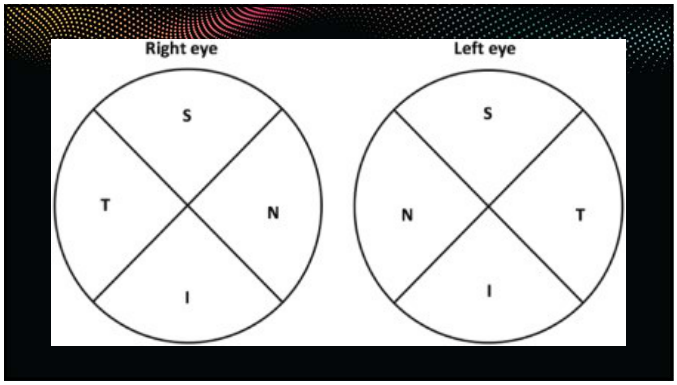

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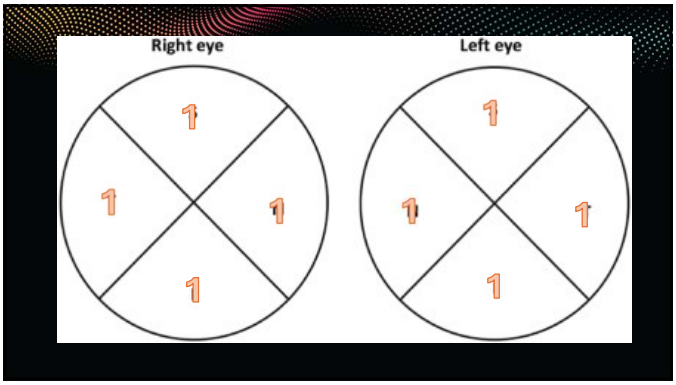

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The Cochet-Bonnet esthesiometer

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RED FLAGS

- Disproportionately little pain
- History of HSV/VZV, diabetes, neurosurgery
- Recurrent "non-healing" defects
- Quiet eye despite large defect
- Rapid progression once defect appears

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RED FLAGS

- Disproportionately little pain
- History of HSV/VZV, diabetes neurosurgery
- Recurrent "non-healing" defects
- Quiet eye despite large defect
- Rapid progression once defect appears

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Etiologies of Persistent Corneal Epithelial Defect

ETIOLOGY	COMMON DISEASE ENTITIES	
Epithelial/limbal	Epithelial basement membrane disease Recurrent erosions Posttraumatic scar Salzmann nodular degeneration	Band keratopathy Bullous keratopathy Toxic medicamentosa Malnutrition (vitamin A deficiency) Limbal stem cell deficiency
Inflammatory	Keratoconjunctivitis sicca Ocular rosacea Chemical/thermal injury Postinfectious keratitis Autoimmune disorders Sjögren syndrome Pemphigoid	Stevens-Johnson syndrome Graft-vs.-host disease Peripheral ulcerative keratitis Mooren ulcer Rheumatoid arthritis
Neurotrophic	Diabetes mellitus Herpes simplex Herpes zoster Riley-Day syndrome	Anesthetic or topical NSAID abuse Postradiation Postkeratoplasty cranial nerve V damage
Mechanical	Entropion/ectropion Lagophthalmos Trichiasis Blepharospasm	Pseudomembranes/tarsal scar Trachoma Factitious
Idiopathic	Aniridia	Corneal stromal dystrophies

Adapted from Albert DM, Miller JW, eds. *Albert & Jakobiec's Principles and Practice of Ophthalmology.*

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Current Standard Management	Treatment of Refractory Cases	Novel treatments and therapies in development
1. Treat underlying condition (i.e. diabetic keratopathies treated with optimal diabetes management; limbal stem cell deficiencies treated with limbal stem cell transplants; immunosuppression in Stevens-Johnson syndrome, graft vs. host disease, and Sjogren's syndrome) 2. Consider iatrogenic causes (i.e. benzalkonium chloride, topical aminoglycosides, and vancomycin drops may disrupt epithelialization) 3. Aggressive lubrication with preservative-free artificial tears (ATs) and ocular ointments 4. Punctal plug 5. Bandage soft contact lenses (BCL) and/or pressure patching, although pressure patching may be less effective than BCLs 6. Debridement, tarsorrhaphy, administration of botulinum toxin A, cyanoacrylates glue 7. Tetracyclines, prophylactic topical antibiotics and steroids (however, corticosteroids may cause stromal melting) 8. Refer to treatments of refractory cases	**Medical:** Autologous serum eye drops Whole blood derived products (i.e. umbilical cord blood serum and platelet-rich fibrin tears) Scleral contact lenses, prosthetic replacement of the ocular surface ecosystem (PROSE) **Surgical:** Amniotic membrane grafting or transplant (AMT) with fibrin-glue or sutured underneath bandage contact lenses (BCL) Corneal epithelial stem cell transplantation Boston Keratoprosthesis (KPro) implantation Phototherapeutic keratectomy (PTK)	**Medical:** Topical fibronectin Topical thymosin beta 4 (Tβ4), topical fibronectin-derived peptide (PHSRN) Nexagon Topical Epidermal growth factor (EGF) Topical insulin-like growth factor 1 (IGF-1), topical insulin Human growth hormone (HGH) Albumin eye drops (AED) Matrix regenerating agent, ReGeneraTing Agent (RGTA) Amniotic membrane extract eye drops (AMEED) Oxervate (Cenergermin-bkbj), recombinant human nerve growth factor (rhNGF) **Surgical:** Corneal neurotization

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POLL: What's your next step?

1. Refer to corneal specialist
2. Continue same treatment (ATs)
3. Continue same treatment but add BCL
4. Continue same treatment but add Amniotic Membrane
5. Other

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First Line Treatment

- PF ATs OD qhr
- Prophylactic topical Ab QID
- BCL OD
- RTC every 2-3 days
- Removed BCL after 1 week of EW....

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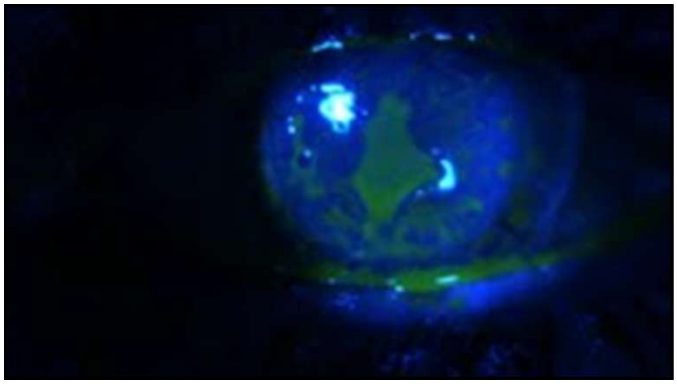

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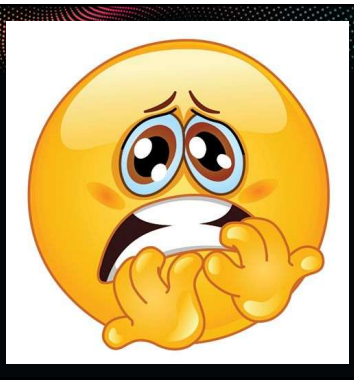


66

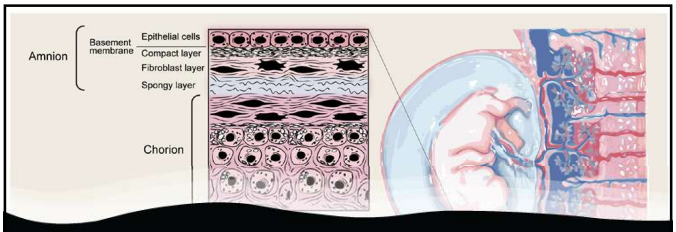
Cryopreserved Amniotic Membrane

ATs qhr

Ab QID

RTC every 2-3 days

67



Amniotic Membrane: Definition

- Placenta consists of two layers:
  - outer chorion which is vascular and in contact with the uterine wall
  - **amnion which is avascular, lies inner to the chorion and is in contact with amniotic fluid**

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Amniotic Membranes: Mechanisms of Action

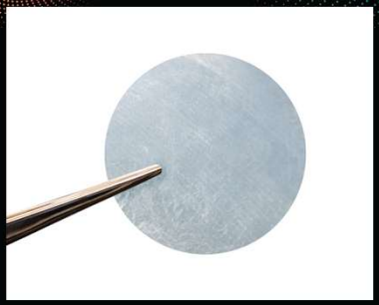
- Mechanical
- Promotion of epithelialization
- Anti-fibrotic
- Anti-inflammatory
- Anti-angiogenic
- Anti-microbial

69

Amniotic Membrane: Preservation

- The AM may be preserved by two methods:
  - Dehydration: dry human amniotic membrane (DHAM)
  - Cryopreservation: cryopreserved human amniotic membrane (CHAM)

70



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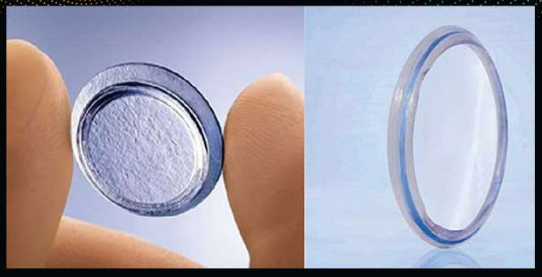
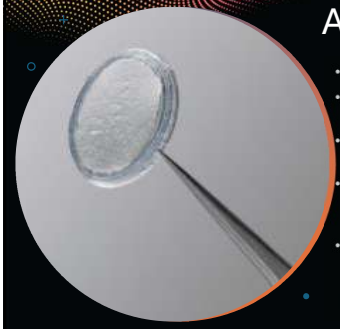


72

Tools needed for application and removal of a CHAM

- anesthetic drops
- saline solution
- blunt-tip or grooved forceps
- eye patching materials /surgical tape (optional)

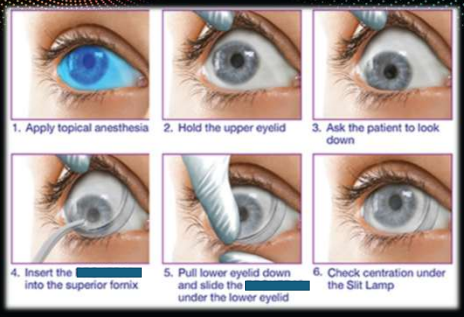
73



Application of CHAM

- Consider wearing gloves
- If frozen, allow the membrane to thaw for at least 5 minutes
- Remove the amniotic membrane from the packaging
- Thoroughly rinse each side of the membrane with a copious amount of saline to rinse off the glycerol solution
- **This is an extremely important step; if you do not rinse off the glycerol media it can burn and cause patient discomfort**

74



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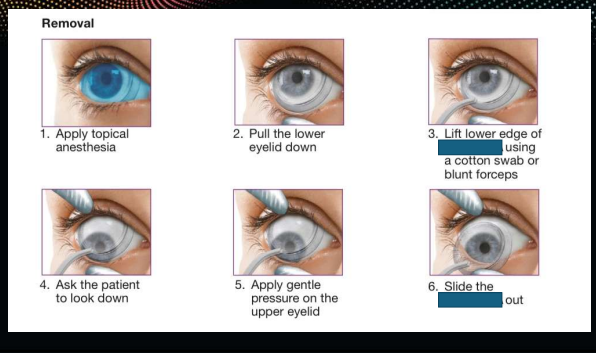

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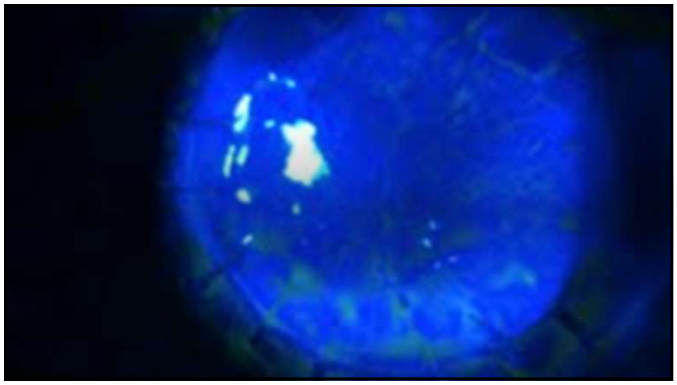
Patient Instructions

- Inform them of the normal FB sensation
- Avoid eye rubbing
- No swimming
- Keep eyes closed while showering
- Limit/discontinue driving
- Do not attempt to remove membrane
- Call office immediately if any unusual pain or discomfort

77

After 5 days...

78



79

What about Oxervate?

- Oxervate® (cenegermin-bkbj) is a recombinant human nerve growth factor (rhNGF)
- FDA-approved (2018) for neurotrophic keratitis (Stages 1–3)
- Promotes corneal nerve regeneration, epithelial healing, and tear reflex restoration
- Dosed 1 drop 6×/day for 8 weeks
- Addresses the underlying cause of neurotrophic PEDs - not just surface protection
- Most effective when healing plateaus or repeatedly breaks down despite conventional therapy

80

Closing Thoughts

When a PED doesn't heal, repeating treatment isn't enough; identifying *why* it stalled changes the outcome.

Amniotic membranes are often underutilized in clinical practice – keep them in mind for these challenging cases.

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Case #5:
Too Late to Turn Back: The High Myope I Wish I'd Met Sooner

Ashley Wallace-Tucker, OD, FAAO, FSLS

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Patient Details

- 14-year-old African American male, first visit to clinic
- Glasses since age 7
- No prior myopia management
- SV SCLs since age 11
- Average of about 0.75D increase per year
- Family Hx: mother −9.00 D (retinal detachment), father −6.50 D
- No siblings
- Referred by friend on baseball team who wears ortho-k

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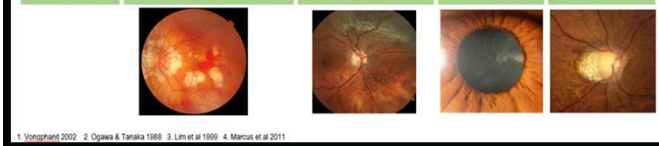
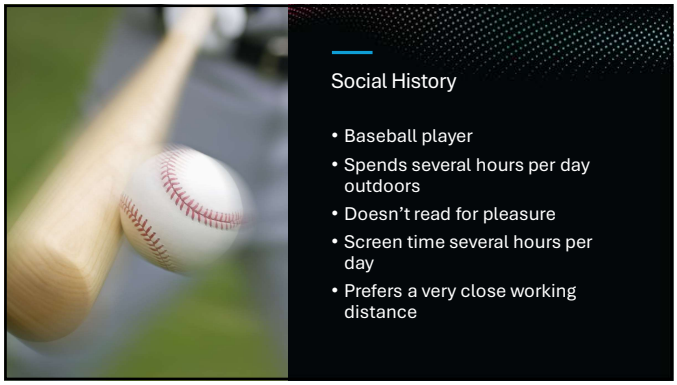
85

Prescription	1 Myopic Macular Degeneration [1]	2 Retinal Detachment [2]	3 Cataract PSC [3]	4 Glaucoma [4]
-1.00 to -3.00	2.2	3.1	2.1	1.65
-3.00 to -6.00	9.7	9.0	3.1	2.46
-6.00 to -9.00	40.6 x risk	21.5	5.5	2.46



1. Vongphanit 2002 2. Ogawa & Tanaka 1988 3. Lim et al 1999 4. Marcus et al 2011

86



Social History

- Baseball player
- Spends several hours per day outdoors
- Doesn't read for pleasure
- Screen time several hours per day
- Prefers a very close working distance

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Exam Findings

Refraction:	• −9.25 D OD • −9.00 D OS
Axial length:	• 27.50 mm OD • 27.53 mm OS
Fundus:	• Myopic macular changes, lacquer cracks, posterior staphyloma

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	Axial length (mm)	
Age (years)	Males	Females
4	22.50±0.71	21.88±0.66
5	22.77±0.70	22.19±0.63
6	22.95±0.66	22.36±0.64
7	23.22±0.75	22.66±0.68
8	23.43±0.76	22.93±0.79
9	23.83±0.91	23.34±0.86
10	24.06±1.08	23.61±1.00
11	24.35±1.01	23.77±1.00
12	24.38±1.08	24.06±1.10
13	24.73±1.14	24.34±1.07
14	25.00±1.16	24.23±1.16
15	25.25±1.23	24.72±1.19
17	25.41±1.34	24.86±1.19
18	25.23±1.34	24.99±1.28
All ages	23.97±1.37	23.47±1.38

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POLL: What's most concerning to you about this patient?

1. Refractive Error
2. Axial Length/Fundus appearance
3. Family History
4. Social History

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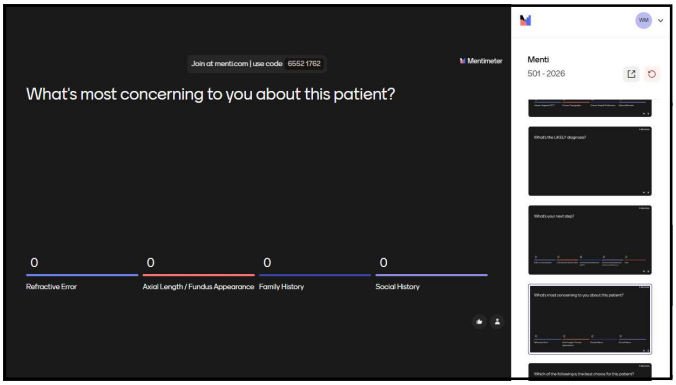

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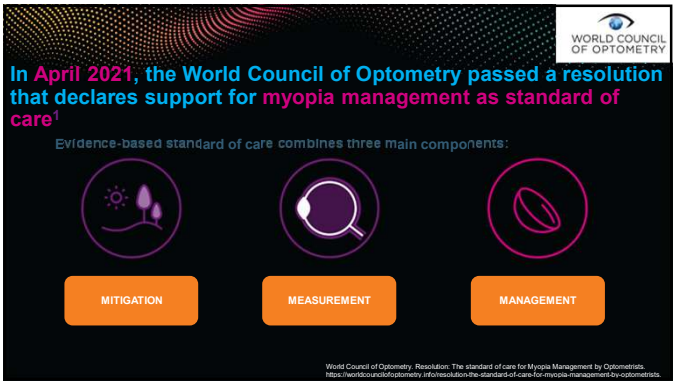

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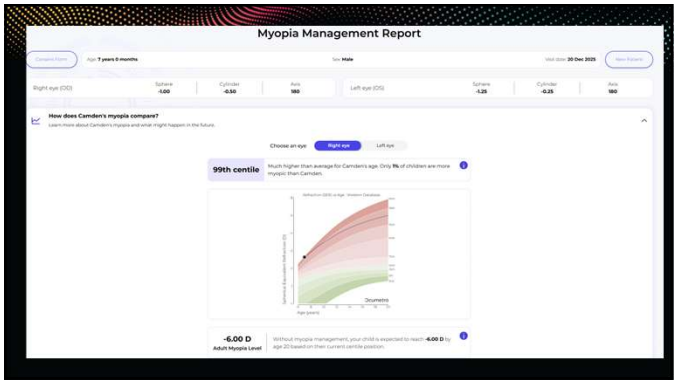

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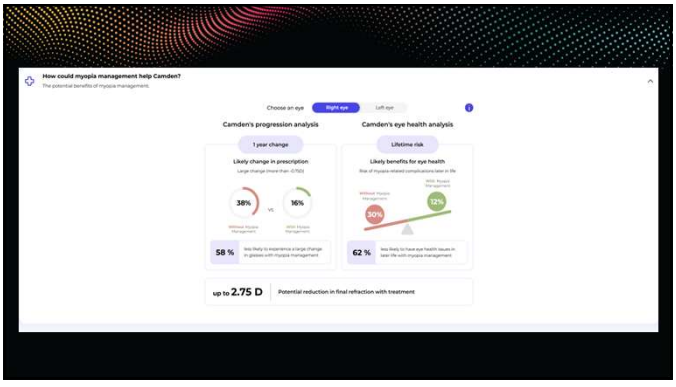

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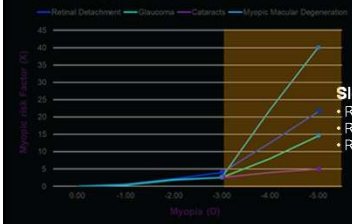
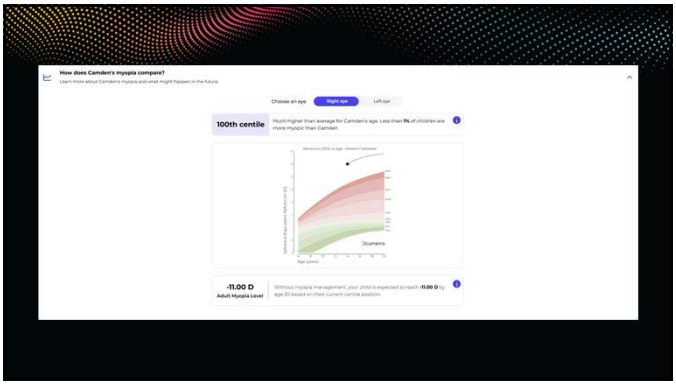
The importance of managing myopia..



Slowing myopia progression by 1 diopter:
- Reduces risk of myopic maculopathy by **40%**
- Reduces risk of open-angle glaucoma by **20%**
- Reduces risk of visual impairment by **20%**

Flitcroft DI. The complex interactions of retinal, optical and environmental factors in myopia aetiology. Prog Retin Eye Res. 2012 Nov;31(6):622-60.
Bullimore MA, Brennan NA. Myopia Control: Why Each Diopter Matters. Optom Vis Sci. 2019 Jun;96(6):463-465.

97



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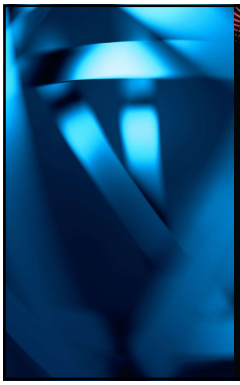

Myopia Management Options

- Orthokeratology
- Dual Focus SCLs
- MF SCLs
- MM spectacles
- Atropine + SV SCLs
- Combo therapy

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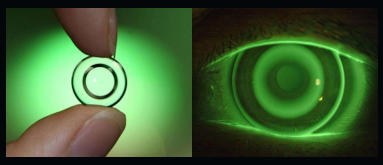
Orthokeratology



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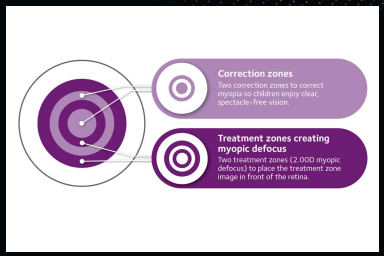
Dual Focus SCLs



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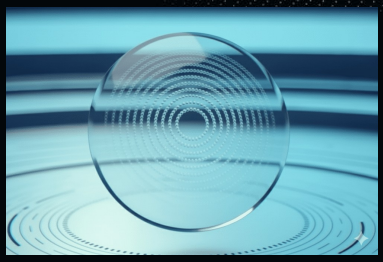
Myopia Control Spectacles



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Atropine

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Multifocal SCLs

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Key Points

- Must be Center Distance
- Daily Disposable or Monthly
- Availability of higher powers (sphere and cylinder)
- OFF LABEL

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PRACTICAL IMPLICATIONS OF COMBO THERAPY

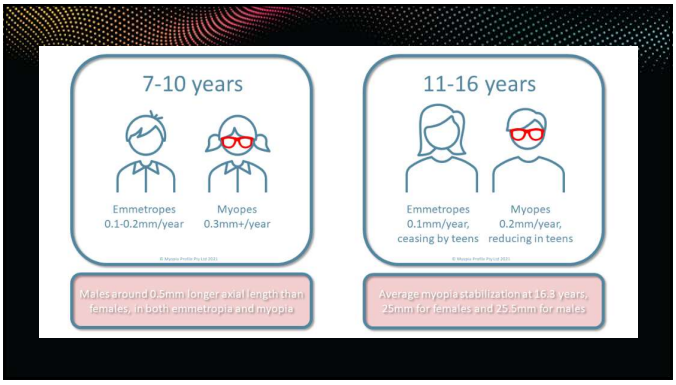
- Increased chance of noncompliance
- Careful coordination with contact lenses
- Increased cost
- Trickier interpretation of clinical findings

106

So, what happened?

- Over the last 3 years, progressed additional -0.75 OD & OS...TOTAL
- Minimal axial elongation.

107



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Closing Thoughts

Classic *missed opportunity* for early intervention

Already showing **pathologic myopia signs** at age 15

Parents ask: *"Why weren't we told sooner?"*

- Delicate conversation
- Focus on what CAN be done vs. what SHOULD have been done in the past

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Case #6: Multifocals

Aaron Zimmerman, OD, MS, FAAO (Diplomate CCLRT)

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Translating GP

- 71 year, white female
- Med Hx: hypertension, hypercholesterolemia, breast cancer (remission)
- Medications: losartan, metoprolol, clopidogrel, atorvastatin
- Long time GP wearer (spheres) with OTC readers

- Refraction:
  - OD –4.25–0.50x068 20/20 +2.75 Add Ks = 42.00 / 42.25 @158
  - OS –3.00–0.50x125 20/20 +2.75 Add Ks = 42.25 / 42.75 @ 033

111

Vision Correction Options

- Continue with GP spheres and OTC readers
  - She reported that she would forget the readers somewhat frequently
- Monovision
- Multifocals
  - Soft multifocals
  - GP aspheric
  - GP translating

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Multifocal

- Soft MF Contact Lenses
  - Single use, 2-week, monthly options
  - Center-Near and Center-Distance options (majority are center-near)
    - Toric MF options – daily, monthly, custom
- Gas Permeable
  - Alternating
    - Best optics of any contact lens, great for high adds, can be a trifocal / progressive
  - Aspheric
    - Scleral, corneal
    - Good for early-to-mid presbyopes

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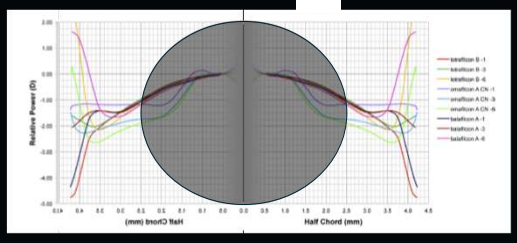
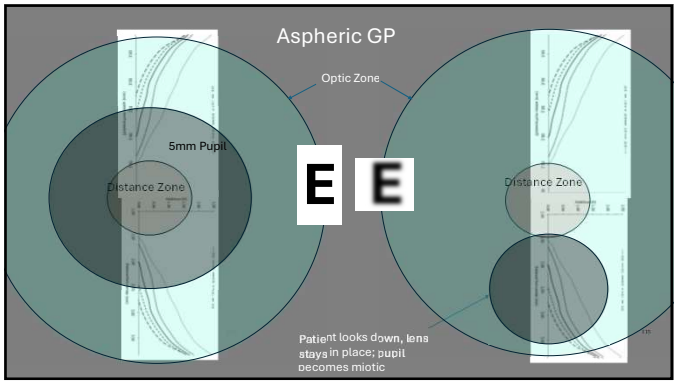
Soft Multifocals

E E



https://doi.org/10.1016/j.clae.2014.07.008

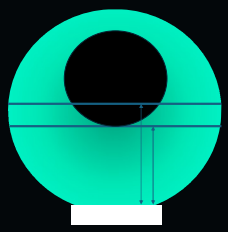
114



115

Translating Lens Design

- BC = 8.08 mm
- Power: -3.75 D
- OAD = 9.5/9.8mm
- Segment Height(s): 3.5/4.2
- Prism 1.5$^{\Delta}$ (0.1mm per 1$^{\Delta}$)
- Add: +1.00 to +3.00(+)
- Truncation: standard = 0.3mm
- Material:



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Audience Poll: Which of the following is the best choice for this patient?

- A) Monovision
- B) Single Vision GP with OTC Readers
- C) Soft Multifocal
- D) Aspheric GP
- E) Translating GP

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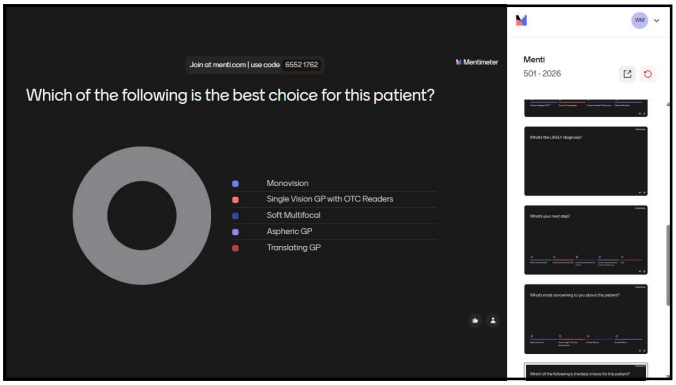

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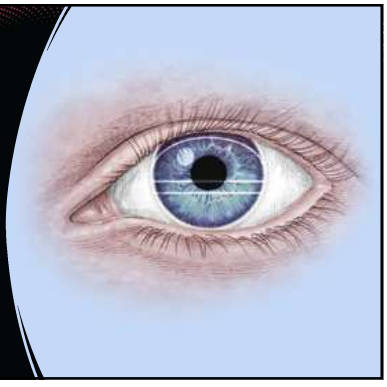
Translating GP

- Long time GP wearer
- Spectacle and corneal cylinder are very close
- High presbyope

- Lower lid position – optimal



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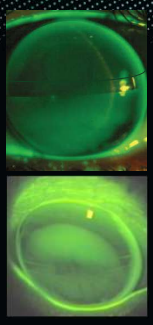
Ordered Lenses

- GP trifocal
  - OD: BC = 8.08mm (41.75 D) ; -3.75 DS; Seg Ht's 3.5mm / 4.2mm; OAD = 9.8/9.5 mm Prism = 1.50 pd; Add +2.75
    - Green; Material = Dk 65
  - OS: BC = 8.03mm (42.00 D); -2.75 DS; Seg Ht's 3.5mm / 4.2mm; OAD = 9.8/9.5 mm Prism = 1.50 pd; Add +2.75
    - Blue; Material = Dk 65



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Conclusions

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Case #7:
"Foggy Days in Athens"

Aaron Zimmerman, OD, MS, FAAO (Diplomate CCLRT)

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Self-Referral to our CL Service – January 2025

- Pertinent History:
  - Diagnosed with Keratoconus in 2023 (OD > OS)
  - Surgical History
    - Athens Protocol (OD only), performed in Toronto, Ontario
    - [PTK + Topography Guided PRK + Cross Linking]
  - Developed persistent corneal haze following the procedure
  - He had seen multiple corneal specialists in northeast Ohio
  - Was seeking a higher order aberration correcting scleral lens & seeking a prescription for compounded topical losartan 0.08%

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Excimer Ablation + Cross Linking

- Athens Protocol (2009)[1]
  - Topography Guided PRK + Corneal Cross Linking
- 2010[2]: PTK + Corneal Cross Linking
- Tel Aviv Protocol (2019)[3]
  - Epithelial PRK + Corneal Cross Linking

1. J Refract Surg. 2009;25:S812-S818; 2. J Refract Surg. 2009;25:S812-S818; 3. J Refract Surg 2019; 35: 377-382

124

Athens Protocol – Efficacy[1]

Authors	Year	Cases	Follow Up (years)	UDVA logMAR	CDVA	K Change D	Complications
Kanellopoulos[2]	2009	198	3	0.96 – 0.3*	0.39 – 0.16*	3.5	2 cases haze
Kanellopoulos[3]	2014	231	3	0.38*	0.2*	46.56 to 44.44	None
Alessio[4]	2013	17	2	0.44	0.003*	2.07	NR
Ohana[4]	2018	98	2	1.23* impr.	NR	4.03	5% Haze
Iqbal[4]	2019	67	2	0.68 *impr.	NR	0.36	1 keratitis
Gore[4]	2018	47	2	0.13*	NR	5.4	NR
Kanellopoulos[6]	2019	144	10	0.19-0.55†	0.59-0.81†	7.6	3.5% hyperopic shift
Kanellopoulos[5]	2019	39	4	0.51-0.65†	0.71-0.81†	8.7	2 late haze

†Decimal Acuity; *logMAR

1. Cornea 2023;42:1199-1205; 2. J Refract Surg. 2009;25:S812-S818; 3. J Refract Surg. 2014;30:342-346; 4. Ophthalmol Ther. 2019;8:15-31.; 5. J Refract Surg. 2019;35:478-483; 6. Cornea. 2019;38: 1049-1057

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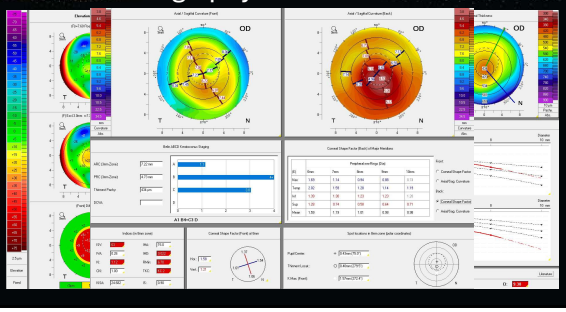
Corneal Tomography – OD



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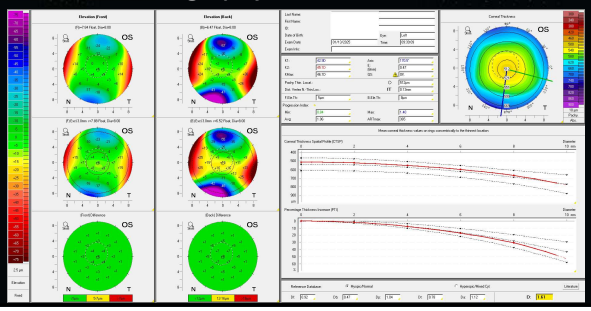
Corneal Tomography – OS



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Refractive Data

	OD	OS
Flat K	44.80 D	42.90 D
Steep K	48.5 D	45.10 D
Kmax	50.4 D	46.10 D
Thinnest Pach	434 µm	512 µm
Refraction	–6.75–2.25x045	–7.75–2.00x164
BSCVA	20/25-2	20/20

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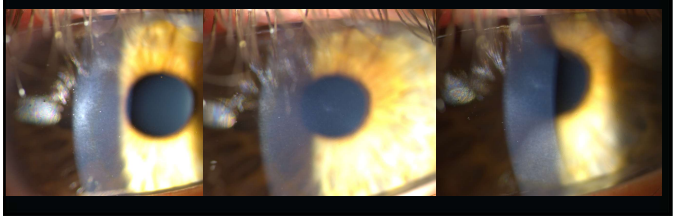
Slit Lamp

- OS = Clear, no slit lamp signs
- OD = see images



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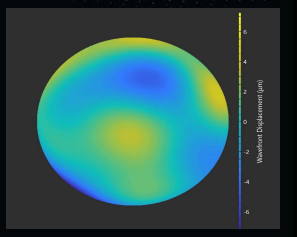
Contact Lens

- Pursued a GP – scleral lens for the OD only
  - He was not interested in correcting the left eye with a GP lens
    - A soft contact lens was assessed OS only = 20/20 VA
  - Boston Sight Scleral
    - VA = 20/25; slight objective improvement, subjective vision also improved
    - Aberrometer over the scleral indicated significant HOAs (vertical coma)
  - Ordered a standard lens with the patient to return in 3 weeks
  - **Prescribed compounded Losartan 0.08%**



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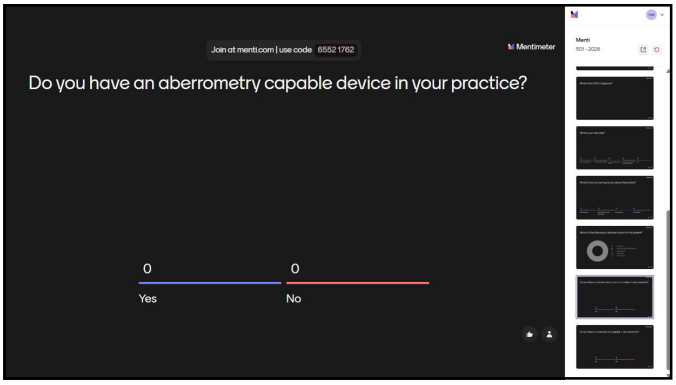
Audience Poll:
Do you have an aberrometry capable device in your practice?

1. Yes
2. No

131



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Audience Poll:
Do you have a corneal tomographer in your practice?

1. Yes
2. No

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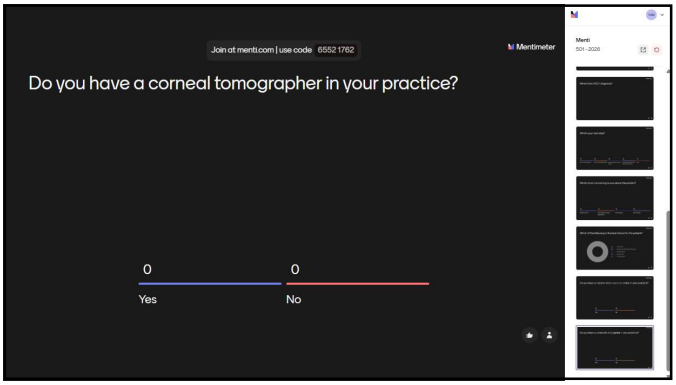

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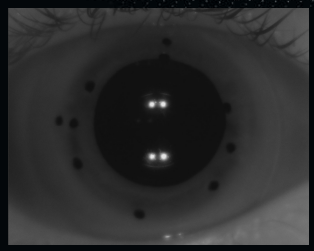
Follow-Up 1 and 2

- Standard scleral lens
  - BScleralCVA = 20/25; improvement but still dissatisfied
  - Repeated HOAs – consistent high vertical coma
  - Ordered a base lens
  - Base lens was applied to eye 3 weeks later



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HOAs – Zernike plot

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HOA Scleral Dispense (3/2025)

- 20/25+2
- Subjectively better vision – still dissatisfied
- Likely limited due to the corneal haze

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Compounded Losartan

- 0.8mg/mL or (0.08%)
- Dosage: 6 times per day
- Duration: four to six months
- Cost: ~ $85.00 to $110.00 per bottle

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Losartan – evidence

- Animal models
  - Rabbit eyes – various induced conditions: alkali burns, PTK, PRK, incisional procedures
- Case reports / series
  - Improvement in haze following:
- RCTs
  - None to date; nothing registered on clinicaltrials.gov

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Corneal Haze and Losartan

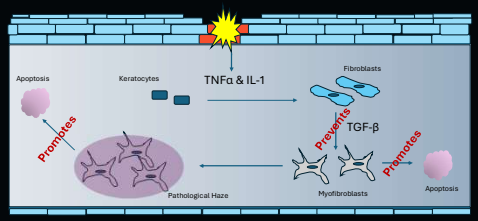

Image adapted from: Graefe's Archive for Clinical and Experimental Ophthalmology (2025) 263:925–934

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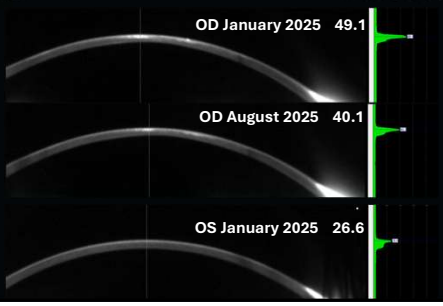
Tomographer – Denistometry



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Conclusions:

- GP correction for keratoconus can still result in suboptimal vision correction
- Be aware of residual higher order aberrations
- Aberration correcting lens surfaces is:
  - effective
  - becoming more common
- Ophthalmic losartan
  - Animal models and case reports have demonstrated success in reducing scarring and corneal haze
  - We need a RCT to better determine its efficacy

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Discussion and Q&A

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Audience poll
Be honest — how confident are you right now?

A. **I've got this**
B. **I had this this morning**
C. **I'll review the slides later**
D. **I'm trusting future me**

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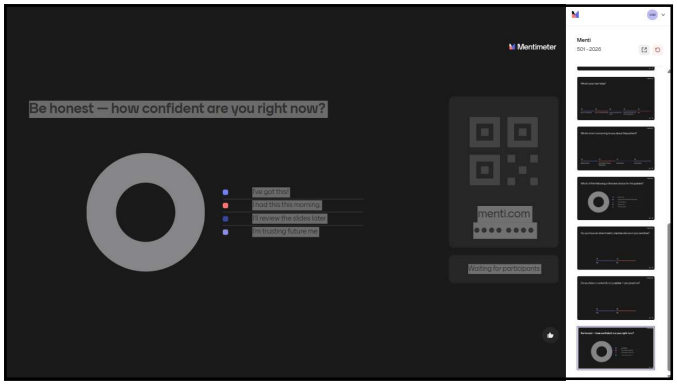
Mentimeter
Be honest — how confident are you right now?
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