TLC for the FLC  
(the funny-looking cornea)

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Pacific University College of Optometry

Statement of Disclosure

The presenter and organizers for “TLC for the FLC” by Dr. Mari Fujimoto has no financial relationship with any company or product mentioned in this presentation.

Expected Learning Objectives

This course will review various cases of irregular corneas and deepen the understanding of selecting an appropriate specialty lens modality, as well as how to troubleshoot a fit. This course will also provide an in-depth understanding of the corneal surface and contact lenses to enhance visual and physiologic fitting outcomes.

At the end of the session, attendees should be able to:

- To enhance GP and soft contact lens fitting by effectively collecting and utilizing data from the corneal topographer
- To inform the primary care clinician on new techniques in fitting soft contact lenses and corneal GP lens design.
- To review the applications of the various specialty lens options for the ectatic and post-surgical cornea, as well as troubleshooting for physiologic and visual complications.

A Road Map to Selecting a Specialty Contact Lens

- Corneal Topography
  - Axial Map
  - Elevation Map
  - HVID/DVID

FLC = Funny-Looking Cornea

<table>
<thead>
<tr>
<th>Normal</th>
<th>Keratoconus</th>
<th>PMD</th>
<th>Keratoglobus</th>
</tr>
</thead>
</table>

Corneal Lens Designs

Piggyback Lens Designs

Hybrid Lens Designs

Scleral Lens Designs
Patients with 350um or less of corneal elevation difference (along the greatest meridian of change) have an 88.2% chance of success with a corneal GP lens.
Indications for Scleral Lens Wear

- Irregular corneas
- Corneal ectasia
- Post-keratoplasty
- Post-refractive surgery
- Ocular surface disease

Advantages of Scleral Lens Wear

- Rehabilitation and protection of the ocular surface
- Lens stability
- Comfort

Challenges with Scleral Lens Wear

- Scleral shape
- Fogging
- Prolapse
- Neovascularization
- Oblate corneas/aphakia

- Application and removal challenges
Case 1: 53 YO Female

CC: "Vision is great in both eyes. My left lens is very comfortable, but I can feel my right lens every time I wear it."

Ocular medications: Patanol 0.1% BID OU

Systemic Health: Seasonal allergies, otherwise unremarkable

Habitual CLs:
OD: Habitual Custom Designed Scleral Lens VA: 20/20
OS: Habitual Scleral: 5856/37.00/+4.25/18.0/2.5D toric PC VA: 20/20

Pellucid Marginal Degeneration

• Compared to KCN, PMD is often diagnosed later in life
• Usually diagnosed between ages 20 – 50 in PMD, compared to puberty – early 20s in KCN
• Kissing doves or crab claw pattern of steepening on topography
• Corneal thinning is located more inferiorly in PMD

Anterior Segment Evaluation

<table>
<thead>
<tr>
<th></th>
<th>Right Eye</th>
<th>Left Eye</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lids and Lashes</td>
<td>Clean, no crusts/flakes</td>
<td>Clean, no crusts/flakes</td>
</tr>
<tr>
<td>Conjunctiva</td>
<td>Palpebral: + papillae inferior and superior, 9 injection</td>
<td>Palpebral: + papillae inferior and superior</td>
</tr>
<tr>
<td>Cornea</td>
<td>Clear, mild inferior thinning</td>
<td>Clear, mild inferior thinning</td>
</tr>
<tr>
<td>Anterior Chamber</td>
<td>Deep and Quiet</td>
<td>Deep and Quiet</td>
</tr>
</tbody>
</table>

Pellucid Marginal Degeneration (PMD)

Right Eye Scleral Fit

Toric Lens Periphery
Custom SCLs for Corneal Ectasia

- Increased center thickness masks irregular astigmatism
- May be able to adjust the center thickness depending on severity of corneal irregularity
- Improved comfort compared to corneal GPs and sometimes scleral lenses
- Daily wear only and quarterly replacement

KCN vs PMD: Axial Maps

SCL Refit OD

- No shadows with diagnostic keratoconus SCL and over-refraction
- Patient reported improved comfort in SCL!
- VA OD in dispensed lens: 20/25

The FLC: PMD

- Assessing the scleral lens with NaFl before removal may help you pinpoint an area of edge lift or leakage
- Depending on the severity, patients with PMD may do well in spectacle lenses, but typically are more successful with a SCL or a scleral
- Custom SCLs with an increased center thickness may decrease the patient’s visual symptoms of irregular astigmatism
57 YO Female

CC: “Sometimes my right eye feels irritated, but overall I am doing well with my lenses. I just came in for my regular follow-up!”

Ocular Hx: Keratoconus OS > OD

Ks OD: 43.50 / 46.51 @ 161
Ks OS: 54.57 / 61.29 @ 028

Systemic Hx: Unremarkable, (-) medications, (-) allergies

<table>
<thead>
<tr>
<th>Eye</th>
<th>Lens</th>
<th>Base Curve</th>
<th>Power</th>
<th>Diameter (mm)</th>
<th>VA</th>
</tr>
</thead>
<tbody>
<tr>
<td>OD</td>
<td>Spherical corneal GP</td>
<td>44.00 D</td>
<td>-13.25 DS</td>
<td>9.5</td>
<td>20/20²</td>
</tr>
<tr>
<td>OS</td>
<td>KCN GP</td>
<td>62.00 D</td>
<td>-26.00 DS</td>
<td>9.8</td>
<td>20/25</td>
</tr>
<tr>
<td></td>
<td>2-week SCL (PBS)</td>
<td>8.4</td>
<td>+1.00 DS</td>
<td>14.0</td>
<td></td>
</tr>
</tbody>
</table>

Keratoconus

- A progressive and non-inflammatory corneal ectasia that often has a bilateral asymmetric presentation.
- The prevalence of keratoconus is about 1-2 per 1000 people and has no gender predilection.
- May be associated with atopic disease, collagen vascular diseases, eye rubbing, and may be hereditary in some cases.

Contact Lens Evaluation

<table>
<thead>
<tr>
<th>Eye</th>
<th>Centration</th>
<th>Fit</th>
<th>Movement</th>
<th>Edge Lift</th>
<th>Stability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Right Eye</td>
<td>Inferior</td>
<td>Moderate apical touch</td>
<td>Minimal</td>
<td>Thin in horizontal meridian</td>
<td>Stable</td>
</tr>
<tr>
<td>Left Eye</td>
<td>Slightly inferior</td>
<td>Apical clearance and alignment, SCL has adequate drape N/T</td>
<td>Unrestricted movement with blink + adequate SCL movement</td>
<td>Adequate 360</td>
<td>Stable</td>
</tr>
</tbody>
</table>

Anterior Segment Evaluation

<table>
<thead>
<tr>
<th>Eye</th>
<th>Lids and Lashes</th>
<th>Conjunctiva</th>
<th>Cornea</th>
<th>Epithelium:</th>
<th>Stroma:</th>
<th>Endothelium:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Clean, no crusts/flakes</td>
<td>Palpebral: tr papillae inferior Bulbar: Clear, no injection</td>
<td>Epithelium: + PEE at 3:30 and 6:30 and semi-circular indentation from 4 to 8:00</td>
<td>Stroma: + 1 mm area of mild opacification and neo bridging the limbus at 4:00</td>
<td>1 mm round faint anterior stromal scar inferior to visual axis, tr striae and thinning</td>
<td>(-) Fleischer ring Endothelium: Clear</td>
</tr>
</tbody>
</table>

Corneal Findings OD

Keratoconus Topography

AXIAL MAP

ELEVATION MAP
Vascularized Limbal Keratitis

• A GP complication that leads to hypertrophy of the limbal cells and focal stromal disorganization
• Often as a result of 3 and 9:00 staining and chronic corneal drying

• Lens parameters to adjust:
  • Decrease overall lens diameter
  • Flatten and/or blend the peripheral curves

GP Refit OD

Based on the NaFl assessment, the patient was diagnostically refit from a spherical GP into a keratoconic GP on her right eye.

**Ordered:** KCN GP / 46.00 / -13.00 / 9.8

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<td>Apical clearance</td>
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The Clinical Application of a GP/SCL Piggyback System

• Low-riding corneal GP
  • May induce 3 and 9:00 staining, VLK, scarring
  • CL discomfort or lens awareness

• SCL selection considerations: low modulus, high Dk, daily disposable

GP Refit OD

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<tr>
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<td>Spherical GP</td>
<td>45.00 D</td>
<td>-14.25 DS</td>
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<td>2-week SCL</td>
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<td>+1.00 DS</td>
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33 YO Male

• **CC:** Blurry vision and broken glasses.
  • Patient has a history of keratoconus
  • **Medical History:** Anxiety disorder, (+) tobacco use
  • Uncorrected VA OD/OS: 20/200

• **Spectacle Rx:**
  • OD: -2.25-2.00x028  **BCVA:** 20/25
  • OS: -2.00-3.75x165  **BCVA:** 20/20
  • Patient is uninterested in contact lens wear at this time

Corneal Topography

Right Eye  
Left Eye
Ocular Health Examination

- Anterior segment OU: mild corneal thinning, (-)striae, (-)scarring
- IOP OD: 16 mmHg, OS: 16 mmHg

<table>
<thead>
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<th>Right Eye</th>
<th>Left Eye</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distinct margins, pink and healthy</td>
<td>Distinct margins, pink and healthy</td>
</tr>
<tr>
<td>0.6R, deep cupping</td>
<td>C/D</td>
</tr>
<tr>
<td>Flat, dry, FLR(+)</td>
<td>Macula</td>
</tr>
<tr>
<td>Flat, dry, FLR(+)</td>
<td>Flat, dry, FLR(+)</td>
</tr>
<tr>
<td>No holes, tears 360</td>
<td>No holes, tears 360</td>
</tr>
</tbody>
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- Patient denies FHx of glaucoma

Keratoconus and Obstructive Sleep Apnea

- OSA incidence may be 34-49% in men and 17-23% in women ages 30-70
- Associated with high MMP9 levels

- Patients with KCN are almost 2x more likely to have OSA compared to patients without KCN
- Both conditions are associated with floppy eyelid syndrome (FES)

Normotensive Glaucoma (NTG) and Obstructive Sleep Apnea

- Risk factors for NTG: abnormal ocular blood flow, poor perfusion pressure, ischemic vascular disorders
- OSA can lead to morbidity and an increased risk of cardiovascular and cerebrovascular disease

- Increased risk of NTG with moderate to severe OSA
Potential Contraindications for Scleral Lens Wear

- Glaucoma
- IOP
- Drainage devices and blebs
- Endothelial compromise
- Overnight wear

IOP and Scleral Lens wear

- May be due to negative pressure induced by suction under the scleral lens, or by compression of the episcleral venous system
- Studies at PUCC, UWRSG, and the University of Montreal, have found previously found that scleral lens wear increased IOP in some patients by about 5 mmHg
- Scleral lens wear also resulted in thinning of the RNFL on OCT

- Negative atmospheric pressure
- Compression of episcleral veins

N = 21
- Age 24.7 ± 4.1 years old
- 15.8 and 18.0 mm scleral lens diameters of the same design, thickness and material

Conclusion: These results suggest that, as evaluated with a transpalpebral methodology, IOP during scleral lens wear may be increased in average by 5 mmHg, regardless of the lens diameter.

IOP and Optic Nerve Head Morphology during Scleral Lens Wear

- Normal, healthy eyes showed greater thinning of the RNFL in the eye wearing the scleral lens for 6 hours (non-statistically significant)
- May mean that we need to monitor IOP and RNFL more closely in diseased eyes or patients with strong risk factors for disease
- IOP increased approximately 4 mmHg in the majority of 50 young, healthy subjects
The FLC: Keratoconus

- In keratoconus, the cornea has a high eccentricity
  - This affects the fit and comfort of a corneal GP
  - Potential for GP-related complications
- Patients with keratoconus have an increased risk of other conditions (e.g., OSA)
- When corneal elevation differences exceed 350 microns, a corneal GP may not be the most optimal lens fit

The Oblate Cornea

Prolate vs. Oblate Corneas

- **Prolate**: Flattening of the cornea as you move from the apex of the cornea to the limbus
- **Oblate**: Flat central cornea and steepening in the midperiphery
  - Post-PKP corneas, post-refractive surgery

Fitting the Oblate Cornea

- **Reverse geometry lenses**
  - Corneal GPs
  - Scleral lenses
  - Custom SCLs

Designing a Reverse Geometry Scleral Lens

Peripheral Lens Adjustments
65 YO Aphake Post-PKP

- “My vision in my right eye gets blurry if I wear my scleral lens for longer than a 3 hours a day.”
- **Ocular Hx:** Traumatic injury to the right eye resulting in aphakia, UGH syndrome, and PKP
- **Systemic Hx:** Hypertension, hypercholesterolemia
- **Ocular Medications:** Timolol BID OD, latanoprost qhs OU

Contact Lens Evaluation

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<tbody>
<tr>
<td><strong>VA</strong></td>
</tr>
<tr>
<td><strong>Scleral Lens Parameters</strong></td>
</tr>
<tr>
<td><strong>Pit</strong></td>
</tr>
</tbody>
</table>

Scleral Lens Fits for an Oblate Cornea

- When we trial our diagnostic lens and decide that we want to flatten the base curve, we must remember our SAM-FAP rule
  - A reverse-geometry lens design = NO base curve change!

Potential Contraindications for Scleral Lens Wear

- **Glaucoma**
- **IOP**
- **Drainage devices and blebs**
- **Endothelial compromise**
- **Overnight wear**
Clear PKP with Endothelial Dysfunction

Normal 18 y/o
3,065 cells/mm²

78 y/o Post PKP
480 cells/mm²

Exam Findings

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<td>Clean, no crusts/flakes</td>
</tr>
<tr>
<td>Palpebral</td>
<td>Clear, no injection</td>
<td>Palpebral: Clear, no injection</td>
</tr>
<tr>
<td>Bulbar:</td>
<td>Clear, no injection</td>
<td>Bulbar: Clear, no injection</td>
</tr>
<tr>
<td>Epithelium:</td>
<td>peripheral microcysts greatest superiorly and nasally</td>
<td>Cornea</td>
</tr>
<tr>
<td></td>
<td>Stroma: 1+ diffuse haze throughout the graft and thickening of cornea in non-360 extending ~1mm into the cornea</td>
<td>Clear cornea, no defects</td>
</tr>
<tr>
<td></td>
<td>Endothelium: 1-2+ guttata</td>
<td></td>
</tr>
</tbody>
</table>

Corneal Graft Edema

- Potential causes:
  - Hypoxia 2' to lens wear
  - Elevated IOP
  - Endothelial cell loss or dysfunction
  - Graft rejection or failure

- Complications:
  - Reduced BCVA
  - Bullae
  - Neovascularization

Optimizing Oxygen Transmission in Scleral Lenses

- High Dk materials
- Lower apical clearance
- Shorter intervals of wear
- Fenestrations
- Decrease center thickness if possible

High Dk Materials

- Hexafon A       Dk = 100
- Hexafon B       Dk = 141
- Roflufon D      Dk = 100
- Roflufon E      Dk = 125
- Tisilfoucon A   Dk = 180
- Tisilfoucon A UV Filter Dk = 163
- Paflufocon D    Dk = 100

Fenestrations in Scleral Lenses

- May decrease atmospheric pressure beneath the lens
- Easier lens removal
- Increased O2 permeability and tear flow
59 YO Male with Penetrating Keratoplasty
- CC: “I want to improve my vision. I heard about scleral lenses and came here to try them.”
- Monocular patient with PKP and glaucoma OD
- Ocular prosthetic OS

Scleral Lens Trial
- Trialed scleral lenses in the highest Dk material
- Minimized the apical clearance to improve oxygen permeability
- Ensured no impingement on the blood vessels or the tube shunt

Final CL Fit

Post-RK Cornea

No Lens Wear +0.25 D Monthly SCL

No Lens Wear +0.25 D Monthly SCL

+6.00 D Monthly SCL
The FLC: Oblate Corneas

- Reverse-geometry lenses may provide the most optimal fit
- Corneal GPs, scleral lenses, and custom SCLs
- Monitor regularly for physiologic complications
- Off-the-rack soft contact lenses may not always be successful on a post-refractive surgery cornea
- Corneal topography, HVID, and over-refraction provide a great understanding of how a SCL will fit

48 YO Male with Keratoglobus

- Followed for keratoglobus in both eyes
- Managed with a custom SCL piggyback system
- CC: “I have discomfort with the soft lens in my left eye.”
- Systemic health: unremarkable
- No allergies or medications, social history is unremarkable

Keratoglobus

- A rare, ectatic condition that presents early in life
- Diffuse global stromal thinning and extreme protrusion of the cornea
- Thinning up to 1/5 of the normal corneal thickness!
- Normal corneal diameter
- Potential associations with connective tissue disorders

Anterior Segment Evaluation

<table>
<thead>
<tr>
<th>Right Eye</th>
<th>Left Eye</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tr crusts/flakes</td>
<td>Tr crusts/flakes</td>
</tr>
<tr>
<td>Tr papillae inferiorly, br injection</td>
<td>Tr papillae inferiorly, br injection</td>
</tr>
<tr>
<td>Bulbar: Clear, no injection</td>
<td>Bulbar: Clear, no injection</td>
</tr>
<tr>
<td>Significant global thinning; (+) ~0.75 mm of corneal neovascularization, (+) tr vertical striae, (+) mild stromal scarring outside of the visual axis</td>
<td>Significant global thinning; (+) ~0.75 mm of corneal neovascularization, (+) tr vertical striae, (+) mild stromal scarring outside of the visual axis</td>
</tr>
<tr>
<td>Deep and Quiet</td>
<td>Deep and Quiet</td>
</tr>
<tr>
<td>Anterior Chamber</td>
<td>Anterior Chamber</td>
</tr>
</tbody>
</table>
Why a Piggyback System?

- Unable to manufacture a scleral lens with an adequate sagittal depth!

Physiologic Reasons for PBS

- Thin and delicate corneal tissue
- Negative pressure under a scleral lens may have the potential to induce an increase in IOP, acute hydrops, or progression of ectasia
- Risk of corneal perforation with minor trauma in keratoglobus
- Sometimes with significant ectasia, we require a CL with a deeper sagittal depth
  - Increase sagittal depth by increasing overall lens diameter, increasing OZD, or steepening the base curve

Right Eye CL Evaluation

**Corneal GP:** Cell GP/56.00D/-15.50D/11.0mm  
**SCL:** HydroKone/5.80mm, 6.00mm BC/plano/15.0mm  
**BCVA:** 20/30-2

Left Eye CL Evaluation

**Corneal GP:** Cell GP/56.00D/-19.25D/11.0mm  
**SCL:** HydroKone/5.00mm, 6.20mm BC/PLANO/15.5 mm  
**BCVA:** 20/25  
Significant fluting of lens edge, greatest nasally and mild edge lift superiorly

New Left Eye Lens Parameters

**Corneal GP:** Cell GP 56.00D BC/-19.25D PWR/11.0mm  
**New Hydro Kone SCL:** 5.00mm, 6.00mm BC/plano/15.5/CT 0.20mm  
**BCVA:** 20/25

The FLC: Keratoglobus

- Keratoglobus is rare, but corneal transplants are not!
  - Up to 11% of patients who have keratoplasty for KCN may develop recurrent ectasia about 20 years post-surgery
  - Similar to keratoglobus, the sagittal depth of these corneas may require a custom SCL PBS when a scleral lens fit is unsuccessful

Spherical Daily Disposable Lenses

- 1-Day AV Trueye (9.0/14.2)  
- 1-Day AV Moist (9.0/14.2)  
- 1-Day AV Oasys (9.0/14.3)  
- Dailies Aqua Comfort Plus (8.7/14.0)  
- Clariti 1 Day (8.6/14.1)  
- Biotrue 1 Day (8.6/14.2)  
- 1-Day AV Trueye (8.5/14.2)  
- Proclear 1 Day (8.7/14.2)  
- Infuse (8.6/14.2)  
- 1-Day AV Moist (8.5/14.2)  
- 1-Day AV Oasys (8.5/14.3)  
- MyDay Daily Disposable (8.4/14.2)  
- Dailies Total 1 (8.5/14.1)  
- Precision 1 (8.3/14.2)
What about the “Not so Funny-Looking Cornea?”

**Step #1**

- Corneal / Lens Diameter
- HVID 11.8 mm, Lens Dia. 14.3 mm

**HVID Distribution (300 Consecutive Eyes)**

- 23.3% Outside Normal Diameter Range

<table>
<thead>
<tr>
<th>Average Corneal Diameter 11.8 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Eyes</td>
</tr>
<tr>
<td>10.9</td>
</tr>
<tr>
<td>11.1</td>
</tr>
<tr>
<td>11.3</td>
</tr>
<tr>
<td>11.5</td>
</tr>
<tr>
<td>11.7</td>
</tr>
<tr>
<td>11.9</td>
</tr>
<tr>
<td>12.1</td>
</tr>
<tr>
<td>12.3</td>
</tr>
<tr>
<td>12.5</td>
</tr>
<tr>
<td>12.7</td>
</tr>
</tbody>
</table>

**Corneal / Lens Diameter**

- 1.25 mm of Scleral Drape
- HVID 11.3 mm, Lens Dia. 13.8 mm

**What You Need to Know About:**

- The Design and Fitting of SCL’s
What are the sagittal heights of our currently available soft contact lenses?

Ben Coldrick PhD.
Head of Technical Development
Optimec Limited
Malvern, Worcestershire UK

Sagittal Height (SAG)
Is calculated as the distance (in microns) from the base line of the lens the posterior apex at the geometric center of the lens.

Daily Disposable SCLs
Spherical Lens Designs (-3.00DS)

<table>
<thead>
<tr>
<th>Alcon</th>
<th>B + L</th>
<th>Cooper Vision</th>
<th>J&amp;J</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>8.5 / 14.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Precision</td>
<td>8.3 / 14.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Day Oasys</td>
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<td></td>
</tr>
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</tr>
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<td>1 Day AV</td>
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Spherical Daily Disposable Lenses

Reusable SCL's
Spherical Lens Designs (-3.00DS)

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<tr>
<td>Air Optix Aqua</td>
<td>8.4 / 14.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air Optix Night &amp; Day</td>
<td>8.4 / 13.8</td>
<td>8.6 / 13.8</td>
<td></td>
</tr>
<tr>
<td>Bionure</td>
<td>8.6 / 14.2</td>
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<tr>
<td>Biofinity</td>
<td>8.6 / 14.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biofinity Ultra</td>
<td>8.6 / 14.2</td>
<td>8.6 / 14.4</td>
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<tr>
<td>Purevision 2</td>
<td>8.6 / 14.0</td>
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<tr>
<td>Proclear</td>
<td>8.2 / 14.2</td>
<td></td>
<td></td>
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<tr>
<td>Frequency 55 Airspheres</td>
<td>8.7 / 14.4</td>
<td>8.4 / 14.6</td>
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<td>Acuvue Oasys</td>
<td>8.4 / 14.0</td>
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<td>Acuvue Vita</td>
<td>8.4 / 14.0</td>
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<td>Avaira Vitality</td>
<td>8.4 / 14.2</td>
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Reusable Lenses: Spherical
### Toric SCL’s

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<th>Manufacturer</th>
<th>Lens Name</th>
<th>8.7 / 14.5</th>
<th>8.8 / 14.0</th>
<th>8.9 / 14.5</th>
<th>9.0 / 14.2</th>
<th>9.1 / 14.5</th>
<th>9.2 / 14.2</th>
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<tr>
<td><strong>Alcon</strong></td>
<td>Air Optix for Astigmatism</td>
<td>B + L</td>
<td>Ultrasoft for Astigmatism</td>
<td>PureVision 2 Toric</td>
<td>PureVision Toric</td>
<td>Biofinity Toric</td>
<td>Proclear Toric</td>
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<td>3.764</td>
<td>3.792</td>
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<td><strong>Cooper Vision</strong></td>
<td>1-Day Acuvue Moist</td>
<td>3.100</td>
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<td>3.400</td>
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<td>3.600</td>
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</table>

### Additional lens properties (beyond sagittal depth) that can influence the physical fit of a specific SCL.

- Material modulus (hardness / stiffness)
- Material elasticity
- Anterior lens design
- Lens thickness
- Hydration/wettability
- Specific gravity

### Using the Sagittal Depth Charts

- Lenses with a **more shallow** sagittal depth are located toward the **left side** of the chart.
- Lenses with a **deeper** sagittal depth are located toward the **right side** of the chart.

### Ocular sag 3160 microns

**HVID 11.8 mm**
Dailies Total 1
8.5 / 14.1

Ocular sag 3470 microns
HVID 11.4 mm

AV Moist
9.0 / 14.2

Biotrue
8.6 / 14.2

Biotrue for Astigmatism
8.4 / 14.5

Dailies Total 1
8.5 / 14.1
Ocular sag 3840 microns
11.3 HVID

AV Moist
9.0 / 14.2

Biotrue
8.6 / 14.2

Dailies Total 1
8.5 / 14.1

Biotrue

Biotrue for
Astigmatism
8.4 / 14.5
A Case for Custom Soft Contact Lenses

Corneal Topography

HVID

AV Moist
9.0/14.2

Dailies Total 1
8.5/14.1

Precision 1
8.3/14.2
• Utilize your topography to guide you in determining the appropriate contact lens option for a patient
• Scleral lenses are great options for patients with irregular corneas
  • Utilize consultation to help you optimize your lens designs
    • Eg. Reverse geometry scleral lenses, ordering high Dk materials, and other lens adjustments
• Consider your other specialty lens options like piggyback systems, custom soft contact lenses, and corneal GPs

Sources