Elizabeth H. Yates, O.D.

Elizabeth H. Yates, O.D. graduated from the Michigan College of Optometry at Ferris State University. She currently practices at Kresge Eye Institute in Detroit and the Sinai-Grace Hospital. Dr. Yates specializes in contact lens fittings including keratoconus, post surgical and post refractive contact lenses. She is currently a Clinical Professor at Michigan College of Optometry; Clinical Professor at Illinois College of Optometry; and a member of the American Optometric Association and Michigan Optometric Association.

Jeffrey Sonsino, OD, FAAO

Dr. Jeffrey Sonsino is in private practice in Nashville, TN at The Contact Lens Center at Optique where he spends half of his time doing clinical research. For 11 years he was an Assistant Professor, division chief of Optometry and director of the Scleral Lens Clinic at Vanderbilt Eye Institute. He is a diplomate in Cornea, Contact Lenses, and Refractive Technology of the American Academy of Optometry and secretary of the AOA’s Contact Lens and Cornea Council. His expertise is in difficult-to-fit or complex contact lens cases and is dedicated to providing optical correction for severe corneal irregularities. Dr. Sonsino has presented numerous lectures and performs research on scleral lenses, novel drug delivery devices, new contact lens designs and novel low vision devices.
Matt Kauffman, OD, FAAO

Dr. Matt Kauffman, OD, FAAO, graduated from the University of Houston College of Optometry. He completed a prestigious Cornea and Contact Lens Residency program at the University of St. Louis College of Optometry, where he trained under the leading gas permeable contact lens and scleral lens fitting optometrists in the country. After residency, Dr. Kauffman joined Family Vision Solutions and Specialty Contact Lens Center in Houston, Texas. Dr. Kauffman is also Adjunct Assistant Professor at the University of Houston College of Optometry.

Melissa Barnett, OD, FAAO, FSLS

Melissa Barnett, OD, FAAO is a Principal Optometrist at the UC Davis Eye Center in Sacramento. She specializes in anterior segment disease and specialty contact lenses. Dr. Barnett lectures and publishes extensively on topics including dry eye, anterior segment disease, contact lenses, corneal collagen cross-linking and creating a healthy balance between work and home life for women in optometry. She serves on the Board of Women of Vision (WOV), Gas Permeable Lens Institute (GPLI) and The Scleral Lens Education Society (SLS). Dr. Barnett is a spokesperson for the California Optometric Association and has appeared on several television shows. In her spare time she enjoys cooking, yoga and spending time with her husband, Todd Erickson, also an optometrist, and two sons, Alex (8) and Drew (6).
How I got started fitting scleral lenses... Successfully!

My Experience:

I started fitting the Europa Scleral® lens in the last 3 months after Cassandra from Visionary Optics came to my office and worked with my patients and myself to allow me to become comfortable with the scleral lens fitting process and the Europa design. I was so happy when she offered this service since in my practice, I have a large keratoconus population of at least ten patients weekly and knew that scleral lenses would provide a great option for many of my patients. Since incorporating the Europa Scleral® lens into my practice, I have received several compliments from patients and much success. It is an easy lens to fit, patients continually comment on the lens comfort, and clarity in vision. The consultation department at Visionary Optics has been a valuable resource for troubleshooting my difficult cases. I am very satisfied with the company and would highly recommend getting started with the Europa Scleral® lens today!

Case History:

One of my first cases that I utilized the Europa Scleral® lens design was for my patient Debra. She is a 50-year-old female with a history of keratoconus. In 2010, Debra came to me and we fit her with corneal GP lenses.

Presenting Vision in 2010:

VCC       OD 20/30          OS 20/25- blurry

After wearing for several months she dropped out due to comfort. We then fit her with hybrid lenses; which were comfortable too, but she struggled with application and removal. She was then fit into a piggyback lens system with her original GP’s, which significantly improved her comfort.

She was successful with the piggyback lens system from 2011 to 2014 but was frequently losing and breaking the lenses. In May 2014, the patient requested to retry hybrid lenses. Unfortunately over a 5-month time period she tore several of the lenses and replacement was becoming a cost issue.

In August 2014, we fit the patient with the Europa Scleral lens.

OD:  7.50  16.0  -1.00     VA 20/30+  |   OS:  7.50  16.0  -5.00     VA 20/25
Patient’s Testimony

“After the long journey of treating my keratoconus, being fit with the Europa Scleral lenses has revitalized my life. My confidence has improved in both my personal and professional life. I am now a more self-assured driver and have a renewed sense of confidence when giving professional presentations – I can actually read my slides! I am amazed by the improved clarity, comfort and hydration the lenses provide. I have found the Europa Scleral lenses to be easier to handle and care for compared to lenses I have worn in the past.

Finding this treatment has changed my life more than I could have ever imagined.” - Debra

Visionary Optics offers a special thanks to Dr. Elizabeth Yates of Kresge Eye Institute in Detroit for the clinical case data presented here.
CLEARLY IT’S VISIONARY.

YOUR GO TO RESOURCE FOR SCLERAL LENSES

With over 14 years of experience designing and manufacturing scleral lenses, the Visionary Optics team has been a leader in the industry; providing custom contact lens expertise and solutions for your hard to fit patients. We can make even the most challenging fits possible with customizable designs and a dedicated and experienced staff.

Visionary Optics Resources:

• **In Office Training:** a Visionary Optics consultant, at no charge to you, will come to your office and guide you through the fitting process of our scleral lens designs.

• **Webinars:** visit our Visionary Optics website for many informational webinars that offer answers to the most common scleral lens questions.

• **Consultants:** our Visionary Optics consultation team is here to assist you with your most challenging fits. Call us or email your photos, videos or questions and we will design the best custom lens for your patient.
Increasing limbal clearance by refitting into Europa Scleral® from the Jupiter Scleral™

CF is a 35 year old emergency department physician and triathlete. She has a history of keratoconus s/p Intacs® OD. She had been wearing Jupiter scleral™ lenses for years with success. She arrived for her annual scleral lens evaluation.

Habitual parameters were:

Visual acuities with lenses were: OD 20/30+

Here is a previous photograph when she presented wearing a cracked lens (centrally), but this shows the orientation of her Intacs® segments OD:

There was insufficient vault over the Intacs® segment OD, so we decided to refit the patient into a Europa Scleral® lens. Europa Scleral® incorporates a reverse geometry posterior surface that will tend to clear Intacs® segments better than a standard geometry design, while maintaining the ability to contour the corneal surface. Additionally, the Europa Scleral® lenses are designed to avoid excessive compression that is common when using Jupiter lenses with reverse geometry.

In the time between this visit and the dispensing visit, the patient returned to my office with complaints of pain and discomfort OD. She had a corneal abrasion in the past and likened the pain to this experience.

Visual acuity was 20/30- OD. Biomicroscopic evaluation was significant for a corneal abrasion inferotemporally overlying the Intacs® segment.

On entrance testing, the technician was instructed to take OCT images prior to removing the scleral lens. What we discovered upon OCT evaluation was remarkable.
Not only was the area over the Intacs® segment very thin. But there was a foreign body in the post-lens tear reservoir. Notice the en face image on the top left portion of the OCT. The foreign body arcs directly across the area where the Intacs® and the lens are thinnest and also at the location of the corneal abrasion.

The patient revealed that she was newly married and the husband had a cat which joined the household. She said that cat hairs were everywhere in the house. We concluded that a cat hair became trapped in the post-lens tear reservoir and abraded her cornea. But the fact still remained that there was insufficient vault over the Intacs® segment.

The final lens dispensed was a Europa Scleral® lens:

Europa Scleral® BC 7.18, Diameter 18.0, Power -13.75-0.50x110

Visual acuity with this lens was 20/25 OD, 20/25 OS, 20/20 OU. 

The patient reported perfect comfort.

Vault overlying the Intac® segments was inspected closely. OCT images show 252u vault overlying the Intacs segment temporally and 115u vault nasally. With significantly greater vault overlying the Intacs® segments, she was allowed to leave with the lens. In six months since this evaluation, there have been no reported complications.
CONCLUSIONS

Intracorneal ring segments (Intacs®, Addition Technology, Lombard, IL) are increasingly being used in the surgical management of keratoconus and post-LASIK ectasia. The primary outcome measure for surgical implantation of Intacs is to allow contact lens intolerant patients to be able to wear contact lenses again.1 In fact, because uncorrected post-implantation visual acuity improves only 0.3-3 lines, most patients with Intacs® must wear contact lenses to achieve optimal visual acuity.1,2

The type of contact lens used to manage patients with Intacs® is critically important to long term success. Severe complications with corneal GP lenses used post-Intacs have been reported.3 It is becoming standard of care to fit these cases only with lenses that vault the irregular corneal surface. Further, as this case shows, using a lens where the prescriber has the ability to manipulate vault over the mid-peripheral cornea using variable reverse geometry is vital.

REFERENCES


Visionary Optics offers a special thanks to Dr. Sonsino of Optique Eyecare in Nashville for the clinical case data presented here.
Overview

The Europa Scleral® is a 2nd generation Jupiter Scleral lens that has been uniquely designed so that it is able to successfully fit a wide variety of corneal and scleral geometries while improving fit and comfort. The three main enhancements are:

Larger Optic Zone
Increases the lens overall sagittal depth which enhances corneal clearance

Mid-peripheral reverse curve
Allows it to successfully fit both prolate and oblate corneas with a single lens fitting set

Enhanced haptic profile
To significantly reduce compression and lens tightening
Notched Europa Scleral®
Lens Increased Comfort for Penetrating Ocular Injury

A 49-year-old male presented for a contact lens fitting. He has a history of a penetrating ocular injury in the left eye. To successfully repair the injury, the patient underwent a corneal transplant, cataract surgery, reconstructive iris surgery, and a trabeculectomy. The patient previously wore a corneal gas permeable (GP) contact lens, but stated he rarely wore his lens due to irritation, discomfort, and because the lens popped out frequently, at least two times per day.

The patient is a construction worker and works in a dry, dusty environment both indoors and outdoors.

Habitual Contact Lens:
OD - No CL worn
OS - Corneal GP Reverse Aspheric
BC: 6.89 / Dia.: 11.0 / Contact lens power (CLP): -8.50

Presenting VA: 20/40-2; OR: -0.50 (20/40-2)

Fit: Lens decentered inferior; good movement; excessive inferior edge lift; several bubbles getting underneath lower portion of lens

Auto - K’s:
OD: 43.00 @ 067 / 43.50 @ 157 | OS: 45.50 @ 110/ 49.25 @ 020

Anterior Segment (OS):
Iris - irregularly shaped iris due to traumatic injury; suture around 9 o’clock
Cornea - clear, corneal graft; scattered pigment on endothelium; one suture at 7 o’clock
Conjunctiva - bleb, superior at 12 o’clock
Lens - PC IOL, clear capsule

IOP (initial exam):
OD - 16 mmHg | OS - 15 mmHg
Corneal topography:

**Initial Europa Scleral® Lens Fitting:**

**OS:**
- BC: 52.00 (6.49)
- Dia.: 18.0
- CLP: -11.50
- Notch: 3.5 mm x 5.5 mm

**Fit:** Central clearance approximately 350 microns; notch too small, excessive pressure on bleb; excessive edge lift near left hand side of notch.

**Initial VA:** 20/30; OR: -0.50 (20/20)

*Did not dispense due to pressure on bleb*

---

**2nd Europa Scleral® Lens Ordered:**

BC: 52.00 (6.49)
- Dia.: 18.0
- CLP: -11.50
- Notch: 4.5 mm x 6.5 mm

**Fit:** Central clearance approximately 350 microns; notch fitting better around bleb; mild edge lift nasal side of notch.

*Dispensed lens*
1st follow-up exam:

Comfort is much improved with the scleral versus the corneal GP lens. Patient is able to comfortably wear lens 8-10 hours. Vision is slightly more blurry than right eye, but is improved with over-refraction.

Fit: Central clearance approximately 300 microns; good clearance inferior and temporal quadrants; a little tight around bleb; mild peripheral blanching.

VA: 20/40; OR: -0.50 (20/20)

IOP: OD - 15 mmHg; OS - 17 mmHg

Final Europa Scleral® Lens dispensed:

BC: 52.00 (6.49)
Dia.: 18.0
CLP: -12.00
Notch: 5.5 mm x 7.5 mm

Final Follow-Up Exam:

This lens is more comfortable than previous lenses. Patient is able to successfully wear lens all day. Vision is sharper.

IOP: OD - 9 mmHg; OS - 13 mmHg

Fit: Central clearance approximately 350 microns; notch fitting even better around bleb; no peripheral blanching.

The Europa Scleral® Lens provided a comfortable, healthy fit, and allowed the patient clear vision throughout the day. The notch was working well and was not causing any significant change to the patient’s IOP.

CONCLUSIONS

Consider designing a “notched” scleral lens for patients with conjunctival elevations such as pinguecula, pterygia, and trabeculectomy blebs.

Visionary Optics offers a special thanks to Dr. Kauffman of Family Vision Solutions in Houston for the clinical case data presented here.
Every patient is unique.

Unlike other lenses with pre-designed lens adjustments, the EUROPA SCLERAL and JUPITER SCLERAL lenses from Visionary Optics have complete customization of lens parameters for every patient need.

These include:

- Front Surface Toricity
- Toric Haptics
- Complete Parameter Customization (optic zone, peripheral curves and center thickness)

Our experienced staff and customizable designs make even the toughest fits possible. Call us today to see why so many doctors have made us their lab of choice.
Europa Scleral® lens has improved my vision and given me my life back

Maggie, a 73-year-old Caucasian female presented with a history of scleral lens wear. She complained that her vision was foggy with the lenses. She recently broke the left scleral lens.

**Medical History:**
Maggie has a history significant for Sjögren’s syndrome with associated dry eye. Additional medical history included rosacea, hypothyroidism, obesity, lupus, Raynaud’s syndrome and anxiety. She was currently taking Plaquenil 200mg bid po for 6 years. No signs of Plaquenil toxicity were present in either eye.

**Ocular History:**
Maggie has had LASIK OU, cataract surgery OU, and a Yag laser capsulotomy OS. She had corneal scarring of her right eye secondary to perforation as a result of her cataract surgery. She has a history of GP contact lens wear for 30 years, soft contact lens wear for 15 years, and scleral lens wear for 2 years.

**Presenting Exam:**
Slit lamp examination revealed ocular rosacea, telangiectasia of eyelid margins and 1+ meibomian gland dysfunction OU. The conjunctiva had trace injection and 2+ conjunctivochalasis OU. Lasik flaps with temporal hinges were stable in both eyes. In the right eye, an anterior stromal scar was present paracentrally with stromal thinning and pigment. 1+ guttata was present in the right eye.

Large vertical trans-illumination defects adjacent to pupil were present in the right eye.

The left eye had a temporal trans-illumination defect. A scleral fixated posterior chamber intraocular lens was present in the right eye. A stable posterior chamber intraocular lens was present in the left eye.

Intraocular pressures were 10 OD and 10 OS with icare tonometry at 11:05 am. Cup to disc ratios were 0.50 OD and 0.30 OS. The maculae were normal OU.
Presenting VA:

Scleral lens

OD Correctable to 20/30 with pinhole
OS 20/40, no improvement w/ pinhole

The patient was refit into Europa Scleral® lenses.

Initial dispensed Europa Scleral® Lenses

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<thead>
<tr>
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<th>OD</th>
<th>BC</th>
<th>Dia</th>
<th>CLP</th>
<th>VA</th>
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<tbody>
<tr>
<td>BC</td>
<td>44.00D</td>
<td>16.0mm</td>
<td>-2.50</td>
<td>20/25⁻²</td>
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<tr>
<th></th>
<th>OS</th>
<th>BC</th>
<th>Diam</th>
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<th>VA</th>
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<tbody>
<tr>
<td>BC</td>
<td>44.00D</td>
<td>16.0mm</td>
<td>-3.50</td>
<td>20/25⁻¹</td>
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</table>

The lenses had adequate central corneal clearance and no peripheral blanching. Over-refraction was plano OU. The lenses were dispensed for daily wear, not to exceed 12 hours per day. The patient was advised to use OTC +2.50 for reading. Recommended solutions were Clear Care for disinfection and 0.9% sodium chloride inhalation solution along with two drops of more viscous Celluvisc® (Allergan) for insertion. Lobob extra strength cleaner was advised for occasional use.

2-Week Follow Up Exam:

The patient reported no experience of foggy vision and was really happy with the vision and good comfort throughout the day with Europa Scleral® lenses.

Visual Acuity:

| OD   | 20/25⁻² | OS   | 20/25⁻¹ | OU   | 20/25⁻¹ |

No over-refraction was present in either eye.

Good central and peripheral vault was present OU. No peripheral blanching was present OU. The patient was advised to continue scleral lens wear for daily wear, no extended wear, not to exceed 16 hours per day.
Europa Scleral® lens has improved my vision and given me my life back.

Patient’s Testimony

“
I have been wearing scleral lenses for the last 2 years and was accepting of the comfort and vision I had but since I was refit into the Europa Scleral lenses, I feel exhilarated and that I have my life back. I often felt claustrophobic as my vision diminished over the years and never thought I would be able to see this well again. Since wearing these lenses for the past 4 months, I feel a whole new world has opened up and can’t express how thrilled I am with the improved comfort, vision and ease of handling.”

- Maggie

Visionary Optics offers a special thanks to Dr. Barnett of UC Davis Eye Center in Sacramento for the clinical case data presented here.
Optimized fit comfort and vision.

The Europa Scleral® lens is a true scleral lens that was designed to deliver an optimized fit, comfort, and vision for successfully managing patients with a wide range of irregular corneal conditions and ocular surface disease.

We recommend Optimum GP materials by Contamac. All lenses are plasma treated to ensure surface wetting.

**7 Lens Fitting set**
Base Curves 42.0 to 54.00 mm in 2D steps

**14 Lens Fitting set**
Base Curves 42.0 to 55.00 mm in 1D steps

**16mm and 18mm Diameters**
Diagnostic Lenses range from Plano to -6.50 and are laser marked with the base curve.

**Visionary Optics Warranty + Guarantee**
- 90 Day Risk Free Warranty with Unlimited Exchanges.
- All lenses are manufactured to specification and designed to be free from defects.

<table>
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<tr>
<th>Base Curves</th>
<th>Any</th>
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<tbody>
<tr>
<td>Diameters</td>
<td>16.0 mm, 18.0 mm and 20.0 mm</td>
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<tr>
<td>BV Powers</td>
<td>Made to Order</td>
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<tr>
<td>Cylinder (toric)</td>
<td>-0.25 D. to -15.00 D. in 0.25 D. steps</td>
</tr>
<tr>
<td>Axis (toric)</td>
<td>1° to 180° in 1° steps</td>
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</table>
Topographer with range of more than 22mm used to empirically fit and customize scleral lenses

**HIGHLIGHTS**

- Fluorescence based structured light topographer
- Designed to provide accurate topography of the complete cornea and sclera with anterior surface image registration
- Multiple use corneal-scleral topographer
- Integrated software for fitting and customizing Europa Scleral® lenses
- Unbeatable Price
Europa Scleral® Lens Reduces Debris and Increases Comfort

Diane is a 63 year old woman with late term ocular graft-versus host disease secondary to bone marrow transplant in 1997 and then 2007. She flew in for her evaluation and has been wearing Jupiter Scleral™ lenses that needed to be removed 3-4 times per day due to lens fogging and discomfort.

Habitual vision in current scleral lenses:
- OD 20/63
- OS 20/25
- OU 20/25

Her habitual lenses appeared as follows:

Figure 1A,B:
Anterior segment OCT (ASOCT) of habitual Jupiter Scleral™ lens on the right eye (A) and left eye (B). The right lens has a central vault of 477um and the left has 247um. Also visible is a cloudy post-lens tear reservoir with debris in both eyes.
Europa Scleral® Lens Reduces Debris and Increases Comfort CONT.

Figure 2:
Anterior segment image of the habitual right Jupiter lens. There is significant debris in the post-lens tear reservoir and the front surface of the lens does not wet properly.

Manual K’s:
42.25/43.00 at 90 mires blurry | 42.75/43.50 at 90 mires blurry

Initial Europa Scleral® Lens Fitting:

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<tr>
<td>BC</td>
<td>45.00</td>
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<td>CLP</td>
<td>-1.50</td>
<td>-2.00</td>
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Figure 3A,B:
ASOCT of the first Europa Scleral® lens trial on the right eye (A) and left eye (B). Both lenses have no vault over the cornea and the base curves need to be steepened.
**Second Europa Scleral® Lens Trial:**

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<td>BC</td>
<td>52.00</td>
<td></td>
<td>BC</td>
<td>53.00</td>
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<tr>
<td>Dia</td>
<td>16.00mm</td>
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<td>Dia</td>
<td>16.00mm</td>
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<tr>
<td>CLP</td>
<td>-5.00</td>
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These lenses are too steep and the base curves need to be flattened.

**Figure 4A,B:**
ASOCT of the second set of Europa Scleral® lens trial inserted in the right (A) and left (B) eyes. Central vaults were 563um OD, 605um OS. These lenses are too steep and the base curves need to be flattened.

**Third Europa Scleral® Lens Trial:**

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<td>50.00</td>
<td></td>
<td>BC</td>
<td>49.00</td>
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<tr>
<td>Dia</td>
<td>16.00mm</td>
<td></td>
<td>Dia</td>
<td>16.00mm</td>
</tr>
<tr>
<td>CLP</td>
<td>-4.00 OR Plano</td>
<td></td>
<td>CLP</td>
<td>-3.50 OR -1.00</td>
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<tr>
<td>VA</td>
<td>20/20-</td>
<td></td>
<td>VA</td>
<td>20/63</td>
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CONTINUE READING >
Europa Scleral® Lens Reduces Debris and Increases Comfort CONT.

**Figure 5A,B:**
ASOCT of the third set of Europa Scleral® lens trial on the right (A) and left (B) eyes. The central vaults were 324um OD, 165um OS.

---

**Plan:**

**OD**    Add 2D toric peripheral curves (PCs) to better align with sclera
**OS**    Steepen base curve by 1D, change power, add 2D toric PCs

**Dispensing Visit:**

Diane flew in for her dispensing visit and the lenses were inserted and allowed to settle for 25 minutes. Diane commented that the lenses were so comfortable that she could not feel them in her eyes.

**VAcc:**

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<tbody>
<tr>
<td>OD</td>
<td>20/20-2 OR -0.25 OD, 20/20-</td>
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<tr>
<td>OS</td>
<td>20/32 OR +0.25 OS, 20/25</td>
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<tr>
<td>OU</td>
<td>20/20</td>
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Figure 7:
Anterior segment image of the right lens at dispense after 25 minutes on the eye. There is no evidence of post-lens tear reservoir debris.

OCTs:

Figure 6A,B:
ASOCT of the right (A) and left (B) eyes with Europa Scleral® lens as dispensed. Central vault measured 291um OD, 215um OS.

PLAN
Diane was prescribed 0.9% sodium chloride inhalation saline to be used to fill the lenses. This is considered an off label use of this solution. She would wear the lenses and return to clinic in 2-4 weeks for follow-up and final over-refraction.
DISCUSSION

Debris in the post-lens tear reservoir, what the late Rob Breece termed “the toxic swamp,” is assumed to be cellular debris resulting from mechanical agitation of the sclera. This mechanical agitation is caused by a mismatch between the irregular scleral shape and the spherical back surface of the lens. We know that the sclera becomes more irregular the further from the cornea. So, two ways to resolve debris in the post-lens tear reservoir are to better align with the sclera and to decrease the diameter of the lens. Better alignment with the sclera is possible by adding toric peripheral curves to the scleral lens haptic (portion of the lens that contacts the sclera). At this stage, there is some trial and error involved with finding the amount of toricity required to fix this problem, but adding a standard 2D of toricity seems to be the key in most cases. As the technology of scleral profilimetry improves with the release of the sMap3D instrument by Visionary Optics and Precision Ocular Metrology expected later this year, we will have the ability to map the sclera and essentially perform a “virtual fitting” with the Europa Scleral® lens. With this, the science of aligning the scleral haptic is going to take a huge leap forward.

Visionary Optics offers a special thanks to Dr. Sonsino of Optique Eyecare in Nashville for the clinical case data presented here.

Caution: Federal Law Prohibits Dispensing Without A Prescription