Submission to the American Optometric Association Contact Lens and Cornea Section, Student Research Awards Committee

for

“My Most Challenging Contact Lens Case”

By: Melisa Hockett
Third year Doctor of Optometry Student, Class of 2010
University of Missouri-St. Louis, College of Optometry
My Most Challenging Contact Lens Patient: In a Blink of an Eye

Melisa Hockett

University of Missouri - St. Louis College of Optometry

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Introduction
Out of the approximately 35 million contact lens wearers in North America, 50 percent have reported some dryness-related symptoms. One survey demonstrated that roughly 24.1 percent of contact lens wearers discontinued lens wear due primarily to reasons of dryness and discomfort. (1) Another survey released by Pritchard et al. shows that nearly 34 percent of patients will discontinue contact lens wear once within five to six years of initially wearing contact lenses specifically resulting from discomfort, dryness, and red eyes. Of those 34 percent that discontinue wear the first time, 77 percent will attempt to wear contact lenses again, only to have 48 percent discontinue wear a second time (2). In fact, the group that initially discontinued lens wear stated in the survey that improved comfort and relief of dryness were the two primary factors that could improve their contact lens wear (2).

There are many factors that can contribute to discomfort. Such factors include patient tear composition, hormone levels, environment, and systemic health status, as well as, contact lens fit and material. A poor lens to cornea relationship can result in corneal desiccation. The incidence of corneal desiccation has been reported to occur with 40 – 90 percent of GP lens wearers. (3,4) It has been classified as moderate-to-severe in about 15 percent of these cases. (5) Many causes have been proposed but if normal blinking is compromised or if the patient has poor tear quality, desiccation is more likely to result.

The Basics

Corneal desiccation is defined as epithelial punctate staining of the peripheral cornea in regions adjacent to the edge of a rigid contact lens. (5, 6) As it pertains to the area of cornea that may not be adequately resurfaced with tears after a blink, its location is limited to the 2 to 4 o'clock and 8 to 10 o'clock regions of the peripheral cornea. Initially,
and in most cases, the desiccation consists of isolated punctate stains. However, the staining can coalesce, with engorgement of the adjacent conjunctival blood vessels. In the most severe cases, peripheral corneal thinning occurs with ulceration, neovascularization, and scarring. Patients are often asymptomatic, most commonly in the low grade form of this condition. However, some wearers will report redness and/or dryness. Severe cases may result in photophobia, lens awareness and reduced wearing time.

While the lens to cornea relationship is crucial for contact lens success, it is important not to ignore the anatomy of a patient’s blink. With each blink, the surface of the eye is covered with a salt-rich aqueous secretion of the lacrimal gland and a fatty secretion from the meibomian glands. (7) During a blink the upper lid moves downwards to make contact with the lower lid while the lower lid hardly moves at all. Normal blinking is involuntary and rhythmic when the eye is sufficiently moistened. The most important task of the blink is to prevent dryness, visual glare and ocular injury. These tasks are especially important in contact lens wear. Each blink distributes tears over the anterior surface of the contact lens and simultaneously moves the contact lens over the cornea, thus enabling exchange of tear fluid in the space between the posterior surface of the contact lens and the cornea. Lid closure also cleans the contact lens of any particulate matter on the surface of the contact lens. (7) If the upper lid does not close completely, an area of the cornea will remain exposed and will not be lubricated by the tears. As a result of this partial blinking, the exposed area of the cornea will become dry and feel itchy, scratchy or burning; there may also be a tired or heavy feeling. Dry and red eyes can often become a severe problem for contact lens wearers. Most modern gas
permeable lenses tend to position themselves in a high-riding position on the eye.(7) That portion of the cornea covered by the contact lens is obviously protected but the area surrounding the lens tends to dry very quickly, especially if blinking is inadequate.

Although drying may sometimes make contact lenses difficult to wear from the beginning, the irritation may well occur after several months or even years of successful wear. If the discomfort becomes severe, it may be necessary to refit with a different type of contact lens or even discontinue wearing altogether.

The Case

Patient MH, a 26 year-old white female presented to University Missouri-St. Louis College of Optometry Contact Lens Clinic. MH has a history of GP contact lens wear for 14 years and conventional soft toric lens wear for two years. She was reporting decreased vision with soft toric lenses and decreased comfort with GP wear. MH’s goal is to achieve the comfort of her soft toric contact lenses with the clarity of vision with her gas permeable lenses.

MH is a third year optometry student attending UMSL-CO. Her systemic history was unremarkable; she reported taking oral birth control medication. She has a history of refractive amblyopia and esotropia OD since she was 18 months old. Other pertinent patient and family history was unremarkable. The patient’s comprehensive examination revealed that pupils, motilities, and color vision were within normal limits in both eyes, although local stereopsis was reduced at 200” and no global stereopsis was reported. Vision with her current spectacles was 20/70+ OD and 20/20 OS. The manifest refraction determined was +6.50 -1.50 x 180 (20/60) in the right eye, and
+6.00-1.50x180(20/20) in the left eye. Keratometry determined was 43.50@180/46.00@090 clear mires OU. Slit lamp examination was unremarkable and revealed pertinent negatives including negative neovascularization, GPC, and corneal staining. The assessment is as follows Refractive Amblyopia OD, Constant Unilateral Accommodative Esotropia OD, and Compound Hyperopic Astigmatism OU. Plans for MH include refit patient into contact lenses for improved comfort and vision. Prior to continuation of the fitting process of MH, all past records were forwarded by Northeastern State University Oklahoma College of Optometry, where she has received previous eye care. The contact lens fitting history is outlined below.

**MH first presented to NSUOCO in October 1, 2003:**

Chief Complaint: Reduced wear time due to discomfort with current GP contact lenses

Current Contact Lenses: Boston Absolute PWR +6.50/ OAD 9.2/ BCR 7.8 (20/60-2) Boston Absolute PWR +6.00/ OAD 9.2/ BCR 7.8 (20/25)

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<thead>
<tr>
<th>Current Contact Lens Assessment:</th>
<th>OD</th>
<th>OS</th>
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<tbody>
<tr>
<td>Movement</td>
<td>1 mm with blink</td>
<td>1 mm with blink</td>
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<tr>
<td>Centration</td>
<td>Good</td>
<td>Good</td>
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<tr>
<td>Fluorescein Pattern</td>
<td>Central bearing</td>
<td>Central bearing</td>
</tr>
<tr>
<td>Cornea</td>
<td>3 &amp; 9 O’clock staining</td>
<td>3 &amp; 9 o’clock staining</td>
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Assessment:
Incomplete blink OU
Poor CL fit OU

Plan:
Educate patient on blink training and conscious blinking
Refit patient for better alignment OU
Advise patient to stay out of lenses until refit examination
Refit Examination October 7, 2003:

Pertinent New History: Systane artificial tears everyday. No changes in systemic health since last visit.

Entrance Testing:
Distance VA cc (spectacle): OD 20/100
OS 20/20
Keratometry: OD 43.50 @004/45.75 @090
OS 44.37 @180/46.62 @090
Manifest Refraction: +7.50 -2.25 x 014 20/60+
+5.75 -1.75 x 175 20/20

Diagnostic Lens Evaluation:
1) Boston Envision
   OD: BC 7.7mm OAD 9.6mm CT 0.16mm PWR +0.50 sph
   Fluorescein Pattern: Central bearing and excessive edge lift
   
   OS: BC: 7.7mm OAD 9.5mm CT 0.16 PWR +0.50 sph
   Fluoresce in Pattern: Central bearing, excessive edge lift and inferior decentration

2) Boston Envision
   OD: BC 7.7mm OAD 9.6mm CT 0.16mm PWR -0.50 sph
   Fluoresce in Pattern: Alignment fit and moderate edge lift
   Movement: 1 mm with blink
   Spherical Over-Refraction: +6.50 sph 20/60+1
   
   OS: BC: 7.6mm OAD 9.6mm CT 0.16 PWR -0.50 sph
   Fluoresce in Pattern: Excessive edge lift with blink

3) Boston Envision
   OD: BC 7.5mm OAD 9.6mm CT 0.16mm PWR -1.25 sph
   Fluoresce in Pattern: Central pooling and inferior decentration
   
   OS: BC: 7.5mm OAD 9.6mm CT 0.17mm PWR -1.00 sph
   Fluoresce in Pattern: Alignment fit and good lid attachment
   Movement: 1 mm with blink
   Spherical Over-Refraction: +7.25 20/20

Final Lenses Ordered:
Boston Envision
   OD: BC 7.7mm OAD 9.6mm CT 0.16mm PWR +6.00
   OS: BC: 7.5mm OAD 9.6mm CT 0.17mm PWR +6.25

Dispense Appointment October 13, 2003:
Pertinent New History:
Systane artificial tears everyday. No changes in systemic health since last visit.
Distance VA cc (spectacle): OD 20/100
         OS 20/20
Dispensed new contact lenses in previously ordered parameters and allowed to settle 20
minutes.

VA: OD 20/60
         OS 2/30+1

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<td>Good</td>
<td>Good</td>
</tr>
<tr>
<td>Fluoresce in Pattern</td>
<td>Alignment Fit</td>
<td>No lid attachment</td>
</tr>
<tr>
<td></td>
<td>No lid attachment</td>
<td>Moderate Edge lift</td>
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<tr>
<td>Cornea</td>
<td>No Staining</td>
<td>No Staining</td>
</tr>
</tbody>
</table>

Over-Refraction: OD +0.50 sph
         OS -0.50 sph

New Contact Lens Powers:
Boston Envision
   OD: BC 7.7mm OAD 9.6mm CT 0.16mm PWR +6.50
   OS: BC 7.5mm OAD 9.6mm CT 0.17mm PWR +5.75

Assessment and Plan:
Excellent movement, tear exchange and comfort OU.
Order contact lenses in new powers OU. Dispense contact lenses without appointment
and have patient return to clinic in 1 week for contact lens progress evaluation.

Contact Lens Progress Evaluation November 3, 2003:
Pertinent New History:
Patient reports moderate comfort and excellent vision OU.
Systane artificial tears everyday. No changes in systemic health since last visit.

VA: OD 20/60
         OS 2/20
Current Contact Lens Assessment:

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<td>Alignment Fit</td>
<td>Alignment Fit</td>
</tr>
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<td>Cornea</td>
<td>3 &amp; 9 O’clock staining</td>
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Assessment and Plan:
Good alignment fit and vision OU. Dispense contact lenses.
Advise patient to return to clinic in 6 months for contact lens progress examination.

Contact Lens Evaluation September 17, 2004:

History:
Decreased comfort and wear time with GP contact lenses. “I feel like my lenses are stuck to my eyes”.
No changes in systemic health since last visit.

Entering Visual Acuity:
VA cc (CL): OD 20/60
          OS 20/20-2

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<tr>
<td>Fluoresce in Pattern</td>
<td>Alignment Fit</td>
<td>Alignment Fit</td>
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<td></td>
<td>Minimal Edge Lift</td>
<td>Minimal Edge Lift</td>
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<tr>
<td>Cornea</td>
<td>3 &amp; 9 O’clock staining</td>
<td>3 &amp; 9 O’clock staining</td>
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<tr>
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<td>Temporal&gt;Nasal</td>
<td>Temporal&gt;Nasal</td>
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Refit into Bitoric lens design using Mandell-Moore Bitoric Lens Guide to improve comfort and reduce corneal desiccation.

Auto-Keratometer Readings:
OD 43.95 @177/46.11 @087
OS 44.64 @008/46.65 @098

Manifest Refraction:
OD +7.50 -2.25 x180 20/60
OS +5.50 -1.75 x180 20/20
Order lenses empirically:
Material: Boston XO, OD green tint OS blue tint
Peripheral Curves: 0.4/11.50mm OU Intermediate Curves: 0.3/9.00mm OU
OD BC 7.68/7.40mm OAD 9.6mm PWR +8.25/+6.00 (-) lenticular
OS BC 7.56/7.33mm OAD 9.6mm PWR +5.75/+5.25 (-) lenticular

Current Contact Lens Assessment:

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<td>Fluoresce in Pattern</td>
<td>Alignment Fit</td>
<td>Alignment Fit</td>
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<td>3 &amp; 9 O’clock staining</td>
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Dispense Appointment

October 15, 2004:
Pertinent New History:
Systane artificial tears everyday. No changes in systemic health since last visit.

Distance VA cc (CLs): OD 20/60
OS 20/20
Dispensed new contact lenses in previously ordered parameters and allowed to settle 20 minutes.

Current Contact Lens Assessment:

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<tr>
<td>Movement</td>
<td>1 mm with blink</td>
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<td>Fluoresce in Pattern</td>
<td>Alignment Fit</td>
<td>Alignment Fit</td>
</tr>
<tr>
<td>Cornea</td>
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<td>3 &amp; 9 O’clock staining</td>
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<td>Temporal&gt;Nasal</td>
<td>Temporal&gt;Nasal</td>
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VA: OD 20/60
OS 20/20+2

Sphero-cylindrical Over-Refraction:
OD: +0.50-0.75 x 075 20/60+2
OS: -0.25-0.75 x 015 20/20

Assessment and Plan:
Dispense lenses to patient. Have patient return to clinic in 1 month for contact lens progress evaluation. At that time, assess corneal desiccation, palpebral conjunctiva and bitoric fit.
Contact Lens Progress Evaluation November 12, 2004:

Pertinent New History:
Patient is very happy with vision and comfort.
No changes in systemic health since last visit.

Distance VA cc (CLs): OD 20/50
OS 20/20 +2

Current Contact Lens Assessment:

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<tr>
<td>Movement</td>
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<td>1 mm with blink</td>
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<tr>
<td>Centration</td>
<td>Good</td>
<td>Good</td>
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<tr>
<td>Fluoresce in Pattern</td>
<td>Alignment Fit</td>
<td>Alignment Fit</td>
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<tr>
<td></td>
<td>Minimal lid attachment</td>
<td>Good lid attachment</td>
</tr>
<tr>
<td>Cornea</td>
<td>3 &amp; 9 O’clock staining Temporal&gt;Nasal</td>
<td>3 &amp; 9 O’clock staining Temporal&gt;Nasal</td>
</tr>
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Slit Lamp Examination Findings:
Palpebral conjunctiva, Upper lid: Papillary hypertrophy Grade 2+ OU. Negative Giant Papillary Conjunctivitis OU.
All other findings unremarkable.

Sphero-cylindrical Over-refraction:
OD pl-0.50 x060 20/50
OS plano sph 20/20

Assessment and Plan:
Good bitoric fit OU. Re-order contact lenses with flatter peripheral curve by 0.50mm OU to increase edge clearance and reduce corneal desiccation OU. Maintain all other lens parameters. Dispense new contact lenses without appointment. Have patient return to clinic after 1 week of wear. Switch patient solution to Unique pH to reduce papillary hypertrophy reaction.

New Parameters Ordered:
Material: Boston XO, OD green tint OS blue tint
Peripheral Curves: 0.4/12.00mm OU Intermediate Curves: 0.35/9.00mm OU
OD BC 7.68/7.40mm OAD 9.6mm PWR +8.25/+6.00 (-) lenticular
OS BC 7.56/7.33mm OAD 9.6mm PWR +5.75/+5.25 (-) lenticular

At the contact lens progress evaluation on November 30, 2004, MH reported increased comfort and vision OU. The peripheral curve changes increased edge clearance; however corneal desiccation at 3 & 9 O’clock remained similar to previous visits. MH was released for 6 months due to good fit and no subjective complaints.
Contact Lens Progress Evaluation September 16, 2005:
Pertinent New History:
MH presented with eyes feeling sore, scratchy and like her ‘contact lenses were stuck to her eyes’. She experiences irritation after 1-2 hours of contact lens wear. Her symptoms have been present for about 2 weeks. Her contact lenses were polished last week with no improvement of symptoms. She also used Patanol two times per day with no improvement. She reports vision as 10/10.

Entering Visual Acuities:
VA cc (CL’s): OD 20/50
OS 20/20

Current Contact Lens Assessment:

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<tr>
<td>Movement</td>
<td>1 mm with blink</td>
<td>1 mm with blink</td>
</tr>
<tr>
<td>Centration</td>
<td>Good lid attachment with blink and then decenter inferiorly</td>
<td>Good lid attachment with blink and then decenter inferiorly</td>
</tr>
<tr>
<td>Fluoresce in Pattern</td>
<td>Superior and peripheral bearing, Central pooling</td>
<td>Superior and peripheral bearing, Central pooling</td>
</tr>
<tr>
<td>Cornea</td>
<td>3 &amp; 9 O’clock staining Temporal&gt;Nasal</td>
<td>3 &amp; 9 O’clock staining Temporal&gt;Nasal</td>
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Assessment and Plan:
Contact lenses are fitting too steep OU. Order new contact lenses with new base curve, 0.1mm flatter OU to open up peripheral curve, to reduce 3 & 9 O’clock staining and to improve centration. Schedule contact lens dispense appointment when new bitoric lenses arrive.

New Parameters Ordered:
Material: Boston XO, OD green tint OS blue tint
Peripheral Curves: 0.4/11.50mm OU Intermediate Curves: 0.35/9.00mm OU
OD BC 7.78/7.50mm OAD 9.6mm PWR +8.87/+6.62 (-) lenticular
OS BC 7.66/7.43mm OAD 9.6mm PWR +6.37/+5.12 (-) lenticular

Contact Lens Dispensing Appointment September 30, 2005:
Pertinent New History:
No changes in systemic health since last visit.

Distance VA cc (CLs): OD 20/50
OS 20/20
Dispensed new contact lenses in previously ordered parameters and allowed to settle 20 minutes.
Current Contact Lens Assessment:

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<tr>
<td>Movement</td>
<td>1 mm with blink</td>
<td>1 mm with blink</td>
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<tr>
<td></td>
<td>Adequate lid attachment</td>
<td>Adequate lid attachment</td>
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<tr>
<td>Centration</td>
<td>Good</td>
<td>Good</td>
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<tr>
<td>Fluoresce in</td>
<td>Alignment Fit w/ slight</td>
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<tr>
<td>Pattern</td>
<td>apical clearance</td>
<td>Slight peripheral bearing</td>
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<td></td>
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<td>when lens falls after blink</td>
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<tr>
<td>Cornea</td>
<td>3 &amp; 9 O’clock staining</td>
<td>3 &amp; 9 O’clock staining</td>
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<td>Temporal&gt;Nasal</td>
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<td>Temporal&gt;Nasal</td>
<td>Foreign body tracking</td>
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<td>Temporal&gt;Nasal</td>
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VA: OD 20/50
OS 20/20

Sphero-cylindrical Over-Refraction:
OD: +0.25-0.50 x090 20/50
OS: +0.25 sph 20/20

Assessment and Plan:
Less peripheral bearing than previous contact lenses, good movement, good vision and subjective comfort is good OU. Dispense contact lenses and have patient return for contact lens progress evaluation.

Contact Lens Progress Evaluation November 11, 2005:
Pertinent New History:
MH reports vision is good; however, comfort is only mediocre. Comfort decreases as day goes on but not as quickly as last contact lenses. She reports using Blink Rewetting Drops every 15 minutes and is continuing to use Unique pH everyday and Boston Enzyme Cleaner every fourth day.

Distance VA cc (CL’s): OD 20/50-
OS 20/20

Current Contact Lens Assessment:

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<tr>
<td>Fluoresce in</td>
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<tr>
<td>Cornea</td>
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<td>OD&gt;OS</td>
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Assessment and Plan:
3 & 9 O’clock staining does not appear to be due to any mechanical problem from the lens. Staining is outside of area of lens contact OU. Consider decreasing overall diameter to 8.6mm OU. Order diagnostics contact lenses. Have patient return when lenses come in.

In subsequent exams, the lens diameter was changed from 9.6mm to 8.6mm to 10.4mm.
All changes led to no improvement in patient comfort and the appearance of 3 & 9 O’clock staining on the cornea. MH was dismissed from the care of NSUOCO on June 26, 2006 because she was moving out of state. At the time of her dismissal, she was wearing the following lenses:

Material: Boston XO, OD green tint OS blue tint
Peripheral Curves: 0.4/11.50mm OU Intermediate Curves: 0.35/9.00mm OU
OD BC 7.78/7.50mm OAD 9.6mm PWR +8.87/+6.62 (-) lenticular
OS BC 7.66/7.43mm OAD 9.6mm PWR +6.37/+5.12 (-) lenticular
Wear time was reduced to 4-5 hours per day or socially only.

In August of 2006, MH presented to a private practice in St. Louis, Missouri. Her chief complaint, signs, symptoms and systemic history had not changed. Bitoric contact lenses were ordered with the following powers:

Boston XO OU
OD: +7.00/+5.75  BC:  7.71/7.36 DIA:  9.7 (-) lenticular
OS:  +6.12/+5.00  BC:  7.58/7.34 DIA:  9.7 (-) lenticular
Distance VA: OD 20/50
OS 20/20
No information was given about the fit. These contact lenses were dispensed to patient.

In January 2007, MH presented to the same private practice with the same history of decreased wear time and discomfort. At that visit, a new approach was taken and MH was fit into SpecialEyes, a conventional soft custom toric contact lens. The following lens parameters were ordered and dispensed:
MH reported to be extremely happy with the comfort of her new custom soft toric contact lenses. Unfortunately, this was not the end to her struggles with contact lenses. Although MH experienced excellent comfort, she was unhappy with her reduction of visual acuity. This contact lens caused MH to decrease wearing time but for a completely different reason.

MH presents the clinician with several challenges. First, her high hyperopic refractive error will cause a thick heavy lens. The concern that a heavy hyperopic lens creates is that it is more likely to decenter inferiorly. To correct for this decentration it is important to add a minus lenticular to the edge of the contact lens. The added thickness of a plus lens needed to correct high amounts of hyperopia, decrease the amount of oxygen reaching the cornea. This will exacerbate the second challenge presented by MH, her history of chronic 3 & 9 O’clock staining and discomfort with gas permeable contact lens wear. In addition to the high hyperopic refractive error and symptoms of dryness, MH also has a moderate amount of corneal toricity, 2.25 Diopters OU. This limits the options for clear vision.

On April 2, 2009, MH presented to UMSL-CO Contact Lens Clinic with the goal of achieving the comfort of her soft toric contact lenses with the clarity of vision with her
gas permeable lenses. All pertinent exam data gathered at the contact lens evaluation are 
at the beginning of this case report.

To improve the comfort of gas permeable contact lenses as well as give her optimum 
acuity, we chose to fit MH into a piggyback system. The new Air Optix Night & Day 
contact lens was chosen for the soft carrier. MH supplied the bitoric lenses that were last 
dispensed to her. The following was dispensed to MH:

Silicone Hydrogel Carrier: Air Optix Night & Day PWR -0.25 BC 8.4 DIA 13.8 OU 
Gas Permeable: 
Boston XO OU 
OD: +7.00/+5.75  BC:  7.71/7.36 DIA:  9.7  (-) lenticular 
OS:  +6.12/+5.00  BC:  7.58/7.34 DIA:  9.7  (-) lenticular

Distance VA: OD 20/50-1  
   OS 20/20  
Good movement, centration and fluorescein pattern OU.

**Discussion of Management**

According to the Association of Contact Lens Educators, “as 3 & 9 o'clock often occurs 
with an inferiorally decentered rigid lens, lens design changes to improve centration are 
important. This includes reducing the center thickness and use of a plus lenticular design 
for high minus power lenses and a minus lenticular for all plus and low minus power 
lenses.”(8) An important aspect of this case is the fact the discomfort increases 
throughout the day indicating that this is an issue of dryness and not a lens defect. In any 
case, the edge should be inspected to ensure that it is smooth, free of defects, and is not 
excessively thick or blunt. If with fluorescein application, the edge clearance appears 
quite excessive, reducing edge clearance via a steeper peripheral curve radius, a narrower 
peripheral curve width, or both is indicated. (8, 9)
An article put out by the Eye Research Institute Maastricht, includes 11 treatment options for the management of 3 & 9 o'clock staining found in literature. Five of these treatment options are related to lens parameters, namely edge lift, edge thickness and shape, back surface geometry, total diameter, and back optic zone radius.(10) Three other options are related to lens performance: movement, centration, and surface wettability. Three more variables can be identified: blinking habits, tear supplements, and, finally, switching to a hydrogel material. (9, 10) There is controversy on how to adjust the most important individual variables for management of 3 & 9 o'clock staining.

After thoroughly reviewing the record, it is of interest that an incomplete blink was noted once and then never again. Fewer complete eye blinks, more incomplete eye blinks, and more eye blink attempts were observed in GP wearers with 3 & 9 o'clock staining compared with wearers with minimal staining and non-wearers. In addition, some individual contact lens variables were associated with more incomplete eye blinks (11). Could it be possible that none of these lens changes were necessary? Blinking exercises are indicated if the peripheral corneal desiccation is caused, in part, through partial or incomplete blinking.(8) If the above management methods are not successful, refitting into a silicone hydrogel lens is recommended.(13) This is exactly kind of the methodology used when prescribing a piggyback system for MH. The soft silicone hydrogel lens provides a lens surface interface where the tears can be evenly dispersed among the cornea. The gas permeable bitoric allows for crisp visual acuity.

If, however, a lens parameter change is preferred, what change would be most beneficial and likely to help MH reach her contact lens goals? During the assessment of the current bitoric contact lenses it was determined that the contact lens would not decenter inferiorly
with the absence of lid attachment. In this case, we could eliminate the minus carrier on the lens design. A decreased edge thickness could reduce the amount of corneal desiccation and allow for a more complete blink. (14) Another change the will benefit the comfort of MH would be to change to a high index contact lens material. The first high-index GPs approved by the FDA were by Contamac: Optimum HR 1.51 and Optimum HR 1.53 materials. Most GPs have had index of refractions in the 1.41 to 1.46 range, so these two materials are a definite step up. Both lenses also have low specific gravities, making them even better at reducing lens mass. The higher-index material has a lower oxygen transmission (Dk of 27 for HR 1.53; Dk of 50 for HR 1.51). (15) The benefits of this material lend themselves to a high hyperopic gas permeable correction.

**Conclusion**

Considering these options, MH was advised to return to UMSL-CO Contact Lens Clinic so that the appropriate parameter changes can be made. It is likely due to the persistence and unwillingness of MH to give up that we are coming closer to solving this multi-faceted challenge. In many cases patients would not have been as motivated to succeed as in this case.

When considering treatment for corneal desiccation due to gas permeable lens wear, it is important to rule out the main culprits of this sign. As advised by Dr. Thomas Quinn, OD, “When given a history, think about what you should be looking for during your slit lamp exam. Then ask yourself, what change would be most beneficial to make, if any at all.”(14)
References


6) Gromacki S. Corneal Assessment for Contact Lens Wear: Proper corneal assessment before and following contact lens fitting can ensure wearing success. Contact Lens Spectrum Online. February 2006.


