

A 34-year-old female, highly myopic with moderate with-the-rule astigmatism, presented for non-routine contact lens (CL) examination reporting that she had considerable burning sensation in both eyes and 'disabling dryness' which she felt was exacerbated by CL wear. She also felt she was not seeing clearly with her re-usable monthly hydrogel soft toric CLs (SofLens 66 Toric, alphafilcon A) which had been fitted and prescribed about 12 months ago overseas. The patient also reported that her eyes were constantly irritated and red, thus significantly limiting comfortable lens wear, particularly over the last six months. She was frustrated about not being able to wear her lenses for more than 3-4 hours per day, although would have liked to wear her lenses for at least eight hours a day on a full-time basis. The patient also mentioned that she was considering refractive surgery as she disliked wearing glasses and was 'depressed and frustrated' her CLs did not give her clear or comfortable vision nor did they meet her high visual demands. Visual acuity was 6/7.⁵ binocularly with hydrogel toric lenses (three-week-old lenses). She used a peroxide-based CL care system.

The patient had a chronic history of dry eye or, as it is now often known, dysfunctional tear syndrome,¹ although at the time of the examination, she had not been diagnosed with any associated systemic and pathological conditions. This condition can present itself in everyday clinical practice with varying degrees of severity in both CL wearers and non-CL wearers.¹ Her ocular

Case studies in CLs

In the latest in our occasional series of case studies on contact lens management, **Nisha Jeyaseelan** describes how comfort, vision and health in eyes with aqueous tear deficiency, high ametropia and challenging visual demands may be restored by refitting a SiH lens with unique material properties

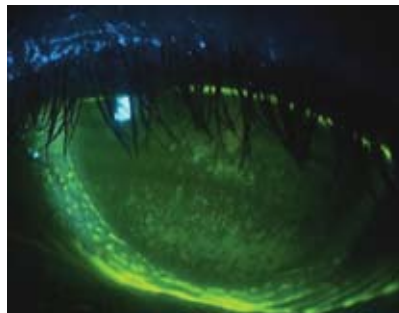
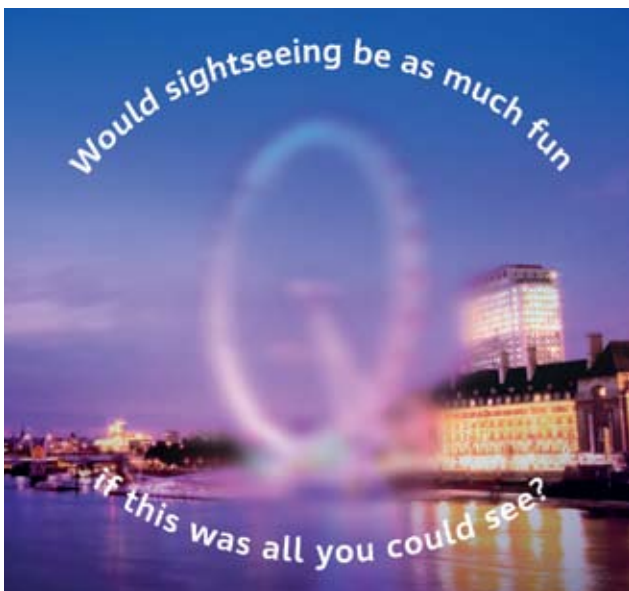


Figure 1 Moderate corneal and bulbar conjunctival staining of right eye at presentation immediately after removing hydrogel lens (alphafilcon A)

Slit-lamp examination

A detailed slit-lamp assessment showed the ocular surface to have moderate diffuse superficial punctate keratitis (SPK) in both eyes (grade 3 staining with heavy stipple staining para-centrally and inferiorly, Efron grading scale), moderate nasal lid-parallel conjunctival folds (LIPCOF), slightly reduced tear break-up time with fluorescein (approximately 7 seconds), low tear meniscus heights (<0.2mm) and a positive phenol red thread test (PRTT scores 8mm in both eyes). These signs were suggestive of reduced tear volume or aqueous tear deficiency.² Both eyes also showed moderate (grade 3, Efron grading scale) nasal intra-palpebral conjunctival staining with fluorescein (Figure 1) and moderate (grade 2, Efron grading scale) bulbar conjunctival chemosis. On lid eversion, there were no signs of lid wiper epitheliopathy or tarsal changes. No

history was otherwise unremarkable and she had infrequently used artificial tear supplements. There was a family history of autoimmune disease, namely Sjögren's syndrome. She took vitamin supplements and herbal medications only. Her occupation as a web designer involved working long hours on the computer under challenging environmental conditions. It was clear from her presenting history that her existing reusable hydrogel monthly toric CLs did not meet her visual needs. Providing optimal clear, comfortable and healthy vision with CLs was a top priority in this challenging but highly motivated CL patient. The initial assessment is summarised in Table 1.



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lid margin diseases were evident. The clinical signs associated with tear film assessment were good predictors of tear deficiency dry eyes^{3,4,5} rather than tear evaporative dry eyes. The corneal staining could also be due to hypoxia associated with a thicker toric (high Rx) hydrogel lens. The hydrogel toric lenses worn showed adequate lens movement, centration and 5° temporal rotation in both eyes. The lens surface demonstrated mild lipid deposition RE>LE after three weeks of wear.

Management and discussion

This case outlines some challenges faced with fitting CLs to provide optimal health, comfort and vision in a patient with tear deficiency dry eyes, hypoxia and a significant degree of myopic astigmatism.

Dry eyes can cause variable degrees of impaired visual functioning, CL intolerance and psychological problems which can in turn significantly impact on patient quality of life.³ Many aetiologies may exist as well. And several combinations of pathological and non-pathological manifestations and different grades of severity may also exist. So what is the ideal contact lens for this patient under the given circumstances? With clear vision, improved comfort and health being the main priorities, one should consider certain key factors when prescribing CLs – sometimes referred to as the ‘balancing of lens material properties’.⁶

Management options here were dictated by the patient’s reduced ocular surface integrity (ie reduced tear volume, ocular surface desiccation, SPKs) and visual needs in her

TABLE 1 Assessment

	Right eye	Left eye
Refraction	-6.00/-2.00 x 5 6/6	-6.75/-2.75 x 170 6/6
K readings	7.36 @ 100/7.52 mm @ 10	7.30 @ 80/7.62 mm @ 170
CLs on initial presentation	SofLens 66 Toric 8.5/ 14.5 -5.50/-1.25 x 10 6/9 ⁺²	SofLens 66 Toric 8.5/ 14.5 -6.00/-2.25 x170 6/7.5 with difficulty
Trial CLs dispensed (BVD corrected @12mm)	Acuvue Oasys for Astigmatism 8.6/14.5 -5.75/-1.25 x10 6/6 ⁺¹	Acuvue Oasys for Astigmatism 8.6/14.5 -6.00/-2.25 x170 6/6
Prescribed lenses after two weeks	Acuvue Oasys for Astigmatism 8.6/14.5 -5.50/-1.25 x10 6/6 ⁺²	Acuvue Oasys for Astigmatism 8.6/14.5 -6.00/-2.25 x170 6/6 ⁺¹

challenging environment (ie repeated computer use and air conditioning). A variety of treatment options were available, the most effective of which were those targeted at any underlying conditions with the goal of restoring or improving tear film quantity and hypoxia. There is the contact lens quandary – the patient’s strong desire to ‘stay in lenses’. An initial treatment algorithm was used which matched the patient’s immediate presenting symptoms and signs so she could be fitted with a lens which enhanced the material properties and functional balance to increase comfort and better dryness resistance.⁶

The main issues which needed to be addressed in this case were:

- Improved oxygen delivery to the cornea (ie a SiH lens) as the marked corneal staining observed may be due to corneal exhaustion
- Improved lens wettability to address the issues of dry eyes
- Optimal vision with a soft toric lens that had a stable design.

Regular and intensive artificial tear therapy was also initiated with

preservative-free Bion tears during the day (one drop every 3-4 hours in the first two weeks and then tapered accordingly) and Systane lubricating drops were also prescribed to be administered at night for tear film rehabilitation. Systane has a unique formulation that rebuilds the tear film.⁷

Furthermore, given her family history and clinical presentation, the patient was referred to her general practitioner and an ophthalmologist for further investigation for Sjögren’s syndrome and other autoimmune conditions. A subsequent full systemic investigation including blood work up for autoimmune diseases was undertaken to provide a more tailored, long-term management for this patient. The patient was also educated on the importance of a healthy and well balanced diet.

At the initial presenting visit, the patient was refitted with a pair of diagnostic silicone hydrogel toric lenses, Acuvue Oasys for Astigmatism. It was advisable to have two or three CL-free days but the patient would not comply,

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hence diagnostic trials were dispensed. These lenses use the accelerated stabilisation design (ASD). Studies have shown that comfort in challenging environments can be improved by fitting hydrogel wearers into silicone hydrogel lenses^{8,9} and that senofilcon A had been found to perform better in all environments including working on computers, driving at night and air conditioned car⁹ than other commonly used SiH lenses. Senofilcon A has also been shown to reduce ocular surface symptoms and signs.¹⁰ ASD has been shown to have greater rotational stability than prism ballasted designs (as with SofLens 66 Toric) during normal and other visual tasks involving large version eye movements.¹¹ The two-weekly SiH diagnostic lenses were dispensed and the patient was instructed to return wearing her lenses after one week for a minimum of 4-5 hours on the day of the scheduled appointment. She was instructed to continue with her peroxide based CL care system. She was also advised to continue with Bion tears and Systane lubricating drops.

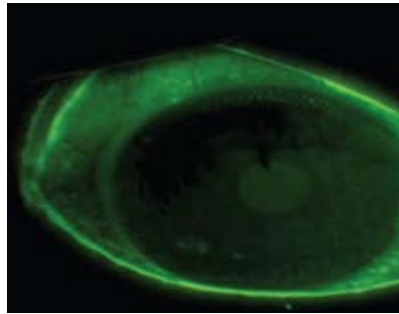
One-week follow-up

At the one-week follow-up appointment, the patient reported and exhibited a significant relief of symptoms and signs with the newly fitted toric SiH lenses. She reported that she was able to continue all her activities to a much greater degree of satisfaction than before and was able to comfortably wear them on average for 7-8 hours per day. On slit-lamp examination, there was reduced fluorescein staining (grade 1, Efron grading scale) of the cornea in both eyes (Figure 2) and reduced conjunctival staining (grade 1, Efron grading scale) and a notable improvement in the integrity of both anterior segments. There was improvement in visual acuities in both eyes to 6/6+. A three-month supply of Acuvue Oasys for Astigmatism was prescribed. The patient was instructed to use the peroxide-based lens care system and the recommended artificial tear therapy and to return for further follow-up appointment in three weeks.

Conclusion

Dry eye is a multi-factorial condition that results in dysfunctional lacrimal functional units.¹² It is one of the most frequent reasons of long lasting discomfort and irritation of the eyes.¹² It is also a fact that tear production steadily decreases with age.¹³ Nowadays, a larger variety of CL options are available than ever

Figure 2
Reduced fluorescein staining of cornea and bulbar conjunctiva at follow-up appointment



before to meet efficiently the needs of even the most challenging patients grappling with dry eye problems and experiencing discomfort frequently. As a consequence, the contact lens experience and ultimate success is greater than ever before.

Computer users with ocular surface complaints should have a detailed ocular surface examination, appropriate tear evaluation tests and a good history taken to treat the symptoms effectively. The practitioner should carry out an evaluation of any underlying ocular and/or systemic causes, so subsequently the appropriate CL option(s) can be recommended. Sometimes supplementary treatment with artificial tear therapy (mild to intensive regimes, paying attention to preservatives in re-wetting drops), punctal plugs etc as well as timely management of any underlying ocular or systemic conditions may be necessary.

This case features a dry eye patient who presents to practice requiring immediate symptomatic improvement which was simply achieved by refitting with another lens material and using tear film supplementation. Although dry eye also requires a more prolonged tailored approach to prevent worsening of the situation or recurrence, this case clearly outlines that by simply changing the lens material and using a SiH lens material offering low coefficient of friction, low modulus and improved oxygen delivery, comfort and vision were optimised. This led to significant improvement in the patient's lens wearing time than previously possible and less hypoxia-related signs and symptoms and an immediate improvement in quality of life.

It is important, however, to keep in mind that further investigations were warranted for long-term management of her tear deficiency dry eye syndrome which may or may not be associated with an autoimmune disease.

Although there is no one treatment or contact lens which solves everyone's problems in a few days or weeks, it is critical to keep in mind the

'balancing of material properties' when recommending CLs for all patients and particularly for those challenging patients in practice with extensive computer use and/or reduced ocular surface integrity. New technologies and materials can help bring previous unhappy lens wearers back into lenses and keep them in the modality. ●

References

- 1 Dry eyes or Sjogren's Syndrome. Eye Institute online link www.eyeinstitute.co.nz/dry-eyes.htm
- 2 Yuan Y *et al.* Reduced tear meniscus dynamics in dry eye patients with aqueous tear deficiency. *American Journal of Ophthalmology* 2010, 149(6): 932-938.
- 3 Pult H *et al.* The relationship between clinical signs and dry eye symptoms. *Eye*, January 2011.
- 4 Cardona G *et al.* Blink rate, blink amplitude and tear film integrity during dynamic visual display terminal tasks. *Current & Eye Research*, 2011, 36(3): 190-197
- 5 Pult H *et al.* A novel method to predict the dry eye symptoms in new contact lens wearers. *Optometry & Vision Science*, 2009, 86(9): E1042-50.
- 6 Osborn K *et al.* A new silicone hydrogel lens for contact lens-related dryness. *Optician*, 2005, 229(6004): 39-41.
- 7 McDonald M. Managing pre- and post-op dry eye. July 2008, www.ophtmanagement.com/
- 8 Chalmers R *et al.* Improving contact lens-related dryness symptoms with silicone hydrogel lenses. *Optometry & Vision Science*, 2008, 85(8): 778-784.
- 9 Young G *et al.* Hydrogel lens comfort in challenging environments and the effects of refitting with silicone hydrogel lenses. *Optometry & Vision Science*, 2007, 4(4): 302-308.
- 10 Riley C M *et al.* Prevalence of ocular surface symptoms, signs and uncomfortable hours of wear in contact lens wearers: the effect of refitting with daily wear silicone hydrogel lenses (senofilcon A). *Contact Lens & Anterior Eye*, 2006, 32(6): 281-286.
- 11 Zikos G A. Rotational stability of toric soft contact lenses during natural viewing conditions. *Optometry & Vision Science*, 2007, 84(11): 1039-1045.
- 12 Jackson W B. Management of dysfunctional tear syndrome: a Canadian consensus. *Canadian Journal of Ophthalmology* 2009, 44(4): 385-394.
- 13 Morris S. Case Study: Management of the chronic dry eye patient. *Optometric Management online*, April 2006 www.optometric.com/article.aspx?article=71617

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