

# Opening our eyes up to new toric insights

by Ian Pyzer FBDO (Hons) CL FIACLE

40  
23/10/09 CET

Confidence in prescribing toric soft contact lenses has grown significantly and as such is no longer considered a speciality by many. This is thanks to the introduction of innovative designs and materials, which provide eye care practitioners with reproducible lenses that are predictable to fit and offer visual stability and comfort for their patients. However, there still remains an opportunity to increase the number of toric fits, which only account for 28% of the total soft disposable market,<sup>1</sup> in a population where 45% of patients who would consider contact lenses have 0.75D of astigmatism or more.<sup>2</sup> Offering toric lenses to spherical contact lens wearers with uncorrected astigmatism is very worthwhile. One-in-four such patients are unaware that toric contact lenses even exist as an option to correct their vision.<sup>3</sup>

This article aims to reveal some insights regarding both the opportunity for increasing toric contact lens prescribing and additionally driving increased patient satisfaction by offering existing wearers the opportunity to benefit from the latest innovations in design and materials.

## Astigmats are in the dark

Practitioners have the opportunity to improve awareness of toric lenses primarily through how they explain astigmatism to patients; according to research findings, consumers are only provided with very basic information about astigmatism, with only about 40% of patients reporting that the impact on their vision was explained.<sup>3</sup> With the vast majority of consumers interested in learning more about astigmatism, the expectation amongst them is that their practitioner should be the main source for this information, followed by the Internet and information booklets. They also expect to hear about what options exist for

correcting their vision at their eye examination. However, three quarters (75%) of neophyte astigmats said they were not offered toric soft contact lenses, and just over 50% are unaware that toric contact lenses exist as an option to correct their vision.<sup>3</sup> Practitioners should therefore capitalise on the opportunity to educate astigmatic patients about modern toric soft contact lenses, which thanks to improvements in design are as quick and easy to fit as spherical lenses, to allow them to consider all available options.

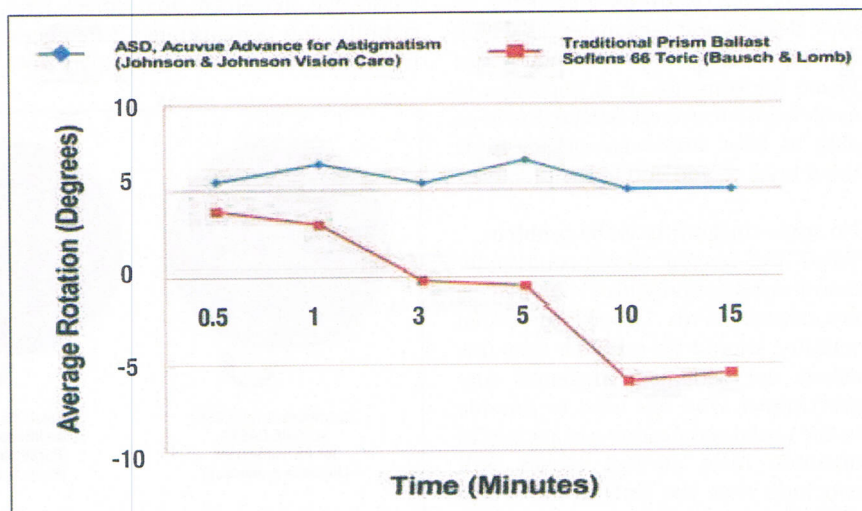
## Toric contact lens wearers have green eyes

Not literally! But practitioners do need to consider why, when compared to spherical contact lens wearers, astigmats are less satisfied with their lenses. Seven times more toric contact lens wearers stated that they were extremely dissatisfied with their lenses compared to those with spherical lenses.<sup>3</sup> If we are to be able to address the problems, we firstly need to appreciate that their foremost reason

for dissatisfaction is poor vision, and then better understand what it is that they experience and why.

First let us consider what they experience. Commonly cited reasons for visual dissatisfaction with toric soft contact lenses include poor night vision, inconsistent vision, and having to adjust the lens.<sup>3</sup> Unlike spherical lens wearers, this inconsistent vision means astigmats find their lenses do not always perform well enough to use during all daily activities.<sup>3</sup> How often a contact lens wearer chooses to wear their spectacles could be a reasonable way of deducing their overall level of satisfaction with their lenses. Toric lens wearers have been shown to be significantly more likely to choose to wear spectacles when compared to those wearing spherical contact lenses.<sup>3</sup> Whether due to discomfort or visual dissatisfaction, this demonstrates that although they are just as likely to want to wear contact lenses, the toric wearer needs to revert to spectacles more often than they would otherwise wish.

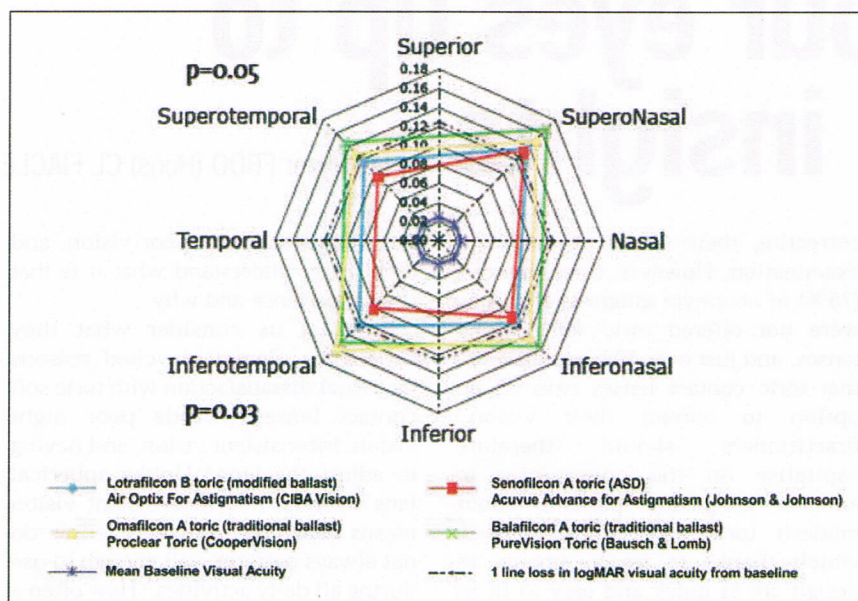
While deeper questioning will better



⇒ Figure 1

Stability during 15 minutes of settling of two toric soft designs<sup>5</sup>





⇒ Figure 2

Re-fixation by gaze acuity<sup>6</sup> (courtesy of Eurolens Research)

reveal their true level of satisfaction, practitioners who do not 'dig deeper' may fail to hear how their patient feels about their toric contact lenses. Despite being dissatisfied, wearers report that they do not feel comfortable asking questions during a routine examination, do not want to appear self-diagnosing and do not want to interrupt.<sup>3</sup> Practitioners may in the past have been reluctant to ask more searching questions to their astigmatic patients, but with developments to toric designs and lens materials which can significantly improve comfort and vision performance, it is important to establish their overall satisfaction to be able to offer improvements, keeping them loyal to you and to the practice.

### No spin – instability is the problem

While the insight above could infer that dissatisfaction with vision may be associated with poor rotational stability, should we consider how this affects our astigmatic patients? Any practitioner who has tried to provide better visual satisfaction to a patient in unstable toric contact lenses will conclude that the only thing worse than blur, is blur that is constantly changing. Such inconsistent vision results from unwanted lens/lid

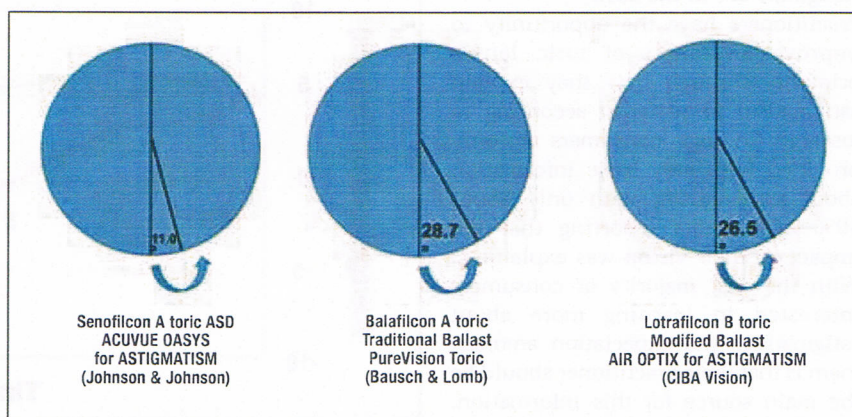
interaction during eye movement and/or blinking, and so eliminating this is crucial if we are to resolve this issue.

Whilst we endeavour to establish how stable the lenses are, within a consulting room it is very difficult to recreate the continuous eye movements that occur during everyday activities, especially while the patient's chin is fixed on the chin rest of a slit lamp. Recent research has helped practitioners understand how real world eye movement may affect lens stability, and demonstrated differences in performance between toric soft

designs, which may otherwise be difficult to establish during the more cursory and traditional in-practice assessment.<sup>4</sup>

Zikos et al objectively compared the rotational stability of two soft toric lens designs, traditional prism ballast and accelerated stabilisation design (ASD), during a range of everyday visual tasks.<sup>5</sup> The ASD lens gave significantly better stability during settling after lens insertion and with large, versional eye movements. The results also showed the ASD lens remained consistently positioned during settling whereas the prism ballast lens drifted, on average, by 10° (Figure 1). For versional tasks, average measurements showed significantly greater rotation recorded for the traditional prism ballast design, which would lead to up to 0.75D induced astigmatism for the lens powers used.

To demonstrate the effects of mis-orientation on vision, Chamberlain et al<sup>6</sup> compared visual acuity (VA) at baseline and after each of four diagonal directions of gaze for four toric soft lenses (one being ASD and the others being variations of prism-ballast). The ASD lens had the most consistent visual performance in all gaze directions (Figure 2).<sup>6</sup> The research also concluded that measurement of rotational stability may be better with post-diagonal eye movements, rather than the more traditionally used orthogonal (primary horizontal and vertical) movements, and will highlight differences in performance



⇒ Figure 3

Effects of gravity on lens rotation after lying horizontally<sup>7</sup>



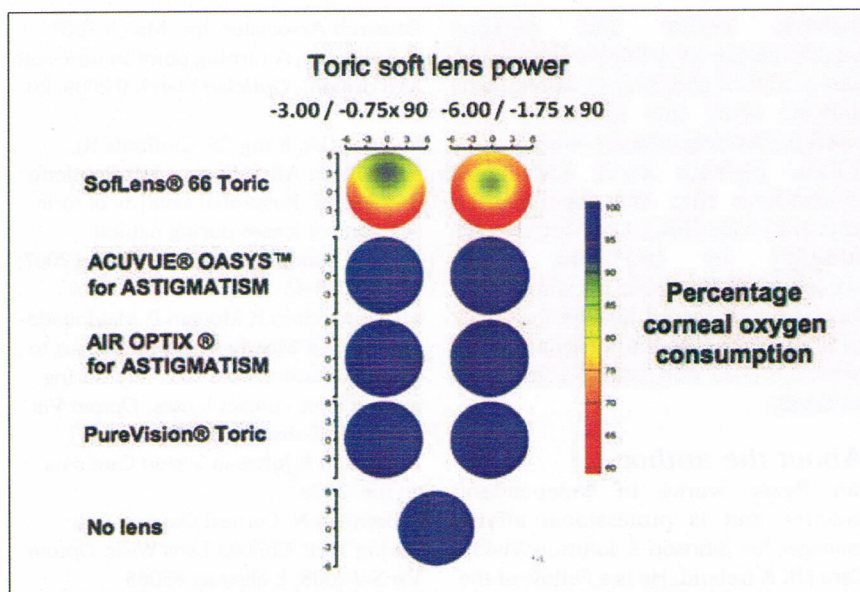


Figure 4

Percentage corneal oxygenation for one hydrogel and three silicone hydrogel toric lenses compared to no lens for daily wear<sup>8</sup> (courtesy of Noel Brennan)

between different toric soft lens designs.

These recent studies clearly demonstrate how toric soft lens design can influence lid/lens interaction and visual performance during eye movements. So although we may not always assess or easily observe instability routinely in practice, for example during large versional or diagonal eye movements, simply asking the patient whether they experience fluctuating or blurred vision during specific activities will help us gauge their level of satisfaction. If this ascertains that a patient is less than satisfied with their vision stability, an alternative, more stable toric soft lens design should be assessed.

In addition to the importance of rotational stability during eye movement, it has also been demonstrated that head movements can lead to gravity playing a part, and that the base of some prism-ballast design lenses can swing as much as 30° away from its desired position, whereas ASD lenses have been shown to have little or no rotation (Figure 3).<sup>7</sup> Again, assessing this in the consulting room may not be practical, but considering the toric soft design best

able to resist gravity is appropriate, especially where an individual's lifestyle involves such movements, as with for example dancing, DIY or sport.

### Astigmats also deserve lenses with improved health benefits

With increased lens thickness profiles found inferiorly in ballast lenses and horizontally in dynamic stabilised lenses, the likelihood of observing neovascularisation in these areas of the cornea with hydrogel materials is greater, due to chronic hypoxia. This makes the transfer of such patients to materials that allow greater oxygen availability to the cornea, namely silicone hydrogels (SiH), even more important than for patients who wear spherical lenses.

Brennan<sup>8</sup> has provided evidence of the ability of these materials to allow the cornea to maintain a normal metabolic rate. Using in excess of 100,000 data points across a range of toric soft lens designs and powers, manufacturer oxygen permeability figures were used to calculate corneal oxygenation profiles during both open- and closed-eye wear. The subsequent colour maps (Figure 4) show where the cornea is able to oxygenate at the estimated normal level, as would be

achieved were no lens worn (represented in blue), compared to areas of the cornea that are unable to do so (represented in yellow, orange or red). Even at higher powers, the SiH toric lenses perform well, allowing between 90% and 100% of normal corneal oxygenation across the entire surface to occur. Conversely, none of the corneal surface under the hydrogel toric lens is able to consume oxygen at the normal rate; only 53% of the surface manages to oxygenate at 80% of the normal rate.

Aside from oxygen, another important aspect of ocular health is additional protection from ultraviolet (UV) radiation. With UV exposure being one of the significant modifiable risk factors in the development of UV-related cataracts,<sup>9</sup> and some studies relating the premature development of age-related macular degeneration (AMD) with higher UV exposure when spending more time outside,<sup>10</sup> patients will be keen to hear about the opportunity to protect their eyes from UV-radiation. The two toric SiH lenses from Johnson & Johnson Vision Care are currently the only toric soft lenses to offer Class I UV protection. The wearing of such lenses, along with the additional protection of sunglasses and a broad-rimmed hat, offers effective protection to patients' eyes from UV radiation.

With many patients yet to be refitted from hydrogel torics, the question is how long will it be before practitioners proactively upgrade them into SiH materials to provide them with significant health and comfort benefits?

### Patients expect to hear about the latest innovations

Contact lens patients want to learn something new when they attend an aftercare appointment. One study reported that most wearers of hydrogel and SiH monthly disposable contact lenses feel that hearing about innovations that can deliver improved comfort is very important.<sup>11</sup> So explaining the benefits of SiH materials and especially those with lower moduli (and hence greater flexibility) and surfaces that are smooth and highly wettable (for improved comfort) will be



worthwhile. Patients are equally interested in hearing about health innovations, so discussing the benefits of the oxygen performance of a lens and the UV blocking properties offered by some lenses will also resonate well.

Whether a patient is an existing toric lens wearer, in a hydrogel or SiH material, or a potential contact lens wearer, there are a number of innovations to discuss. Upgrading them into new lens designs and materials may lead to improvements in vision through greater lens stability, enhanced comfort, as well as the benefits of greater oxygen delivery and UV protection. Selection of a SiH toric contact lens that offers these innovations, along with high levels of fit success, is the key to success, whilst also having a genuine alternative brand to reach for if necessary, as one toric soft lens will not suit all astigmats.

### Conclusions

Astigmats continue to represent a large untapped opportunity in contact lens practice. Proactively managing all astigmats, whether new or existing contact lens wearers, requires a small investment in time from both practitioner and patient. These

patients expect and deserve satisfaction levels as high as those that we aim for, and often successfully deliver, with our spherical lens wearers. As practitioners we need to inform patients about the latest innovations that can significantly improve vision, health and comfort, in addition to increasing their satisfaction. Ensuring astigmats are long-term, successful lens wearers will have a positive benefit in terms of their loyalty to you and your contact lens business.

### About the author

Ian Pyzer works in independent practice and is professional affairs manager for Johnson & Johnson Vision Care UK & Ireland. He is a Fellow of the International Association of Contact Lens Educators and an ABDO CL examiner.

### References

1. Morgan P. Contact Lens Prescribing in 2008. *Optician* June 6 2009, 18-19
2. Holden BA. *The principles and practice of correcting astigmatism with soft contact lenses*. Aust J Optom 1975; 58:279-299
3. Astigmatism Consumer Usage and Awareness Study. Bruno & Ridgeway

- Research Associates, Inc. March 2007
4. Sulley A. A turning point in toric soft lens design. *Optician* March 6 2009, 20-24
5. Zikos GA, Kang SS, Ciuffreda KJ, Selenow A, Ali S, Spence LW, Robilotto R, & Lee M. Rotational stability of toric soft contact lenses during natural viewing conditions. *Optom Vis Sci* 2007; 84:11 1039-45
6. Chamberlain P, Morgan P, Maldonado-Codina C, & Moody K. A vision chart to quantify disturbances in acuity during wear of toric contact lenses. *Optom Vis Sci* 2008; E-abstract 85079
7. Johnson & Johnson Vision Care data on file, 2008
8. Brennan N. Corneal Oxygenation During Toric Contact Lens Wear. *Optom Vis Sci* 2008; E-abstract 85068
9. McCarty CA, Nanjan MB, & Taylor HR. Attributable risk for cataract to prioritize medical and public health action. *Invest Ophthalmol Vis Sci* 2000, 41: 3720-5
10. Weiter JJ, Delori FC, Wing GL, & Fitch KA. Relationship of senile macular degeneration to ocular pigmentation. *American Journal of Ophthalmology*, 1985; 99: 185-7
11. Frangie J, Schiller S, & Hill LA. Monthly wearer survey results. *Optometry Today*, June 13 2008, 39-42

## Module questions

Course code: C-12168

Please note, there is only one correct answer. Enter online at [www.otcet.co.uk](http://www.otcet.co.uk)

1. In a consumer research survey, what percentage of neophyte astigmats was offered toric soft contact lenses?
  - a) 5%
  - b) 15%
  - c) 25%
  - d) 35%
2. Seven times more astigmats are dissatisfied with their lenses than those in spherical lenses. Which of the following is NOT commonly cited as a reason for visual discomfort?
  - a) Poor night vision
  - b) Glare from computer screens
  - c) Inconsistent vision
  - d) Having to adjust the lens
3. In studies evaluating rotational stability during eye movements, Accelerated Stabilisation Design (ASD) and prism-stabilised designs of toric lenses were compared. Which of the following eye movements showed ASD to provide significantly better stability?
  - a) Vertical
  - b) Horizontal
  - c) Diagonal
  - d) Visual search
4. Which of the following toric contact lens designs were found to provide the greatest stability during 90-degree head tilt?
  - a) Lotrafilcon B (modified prism ballast design)
  - b) Balafilcon A (modified prism ballast design)
  - c) Senofilcon A (ASD design)
  - d) All were the same
5. What percentage of the corneal surface is able to oxygenate at the estimated normal level under a mid-water hydrogel toric lens?
  - a) 0%
  - b) 53%
  - c) 90%
  - d) 100%
6. Which of the following aspects of a contact lens material are LEAST likely to impact on patient comfort?
  - a) Oxygen performance
  - b) Modulus
  - c) Wettability
  - d) Lubricity

Please complete online by midnight on December 18 2009 – You will be unable to submit exams after this date – answers to the module will be published on [www.optometry.co.uk](http://www.optometry.co.uk)