Rotational Stability and Eye Rubbing in Toric Contact Lens Wear

Gerard Cairns, PhD, MCOptom

Introduction
Having crisp, clear vision from waking until bedtime without experiencing fluctuations in visual clarity is important to contact lens wearers. For patients with astigmatism, achieving this goal may be more difficult, especially when the amount of astigmatism is relatively low (less than 1.00 DC). These patients are sometimes treated with spherical lenses, resulting in less than optimal vision correction. For those who are wearing toric lenses, other circumstances affect vision such as eye rubbing and the rotational stability of the contact lens.

In a global study of vision corrected patients, quality of vision and vision that is as close to natural as possible were the two most important needs of astigmatic patients when selecting eye-related products.1 Of the 1,624 important needs of astigmatic patients when selecting eye-related products, the two most frequent causes of eye rubbing include itchy eyes, tired eyes, and debris under the lens (Figure 1). The study reported that 87% of toric lens wearers rub their eyes approximately 6.3 times per day while wearing contact lenses, and do so more frequently than spherical lens wearing patients.2

Eye rubbing can have visual consequences for contact lens wearers. Toric lens wearers note their contact lenses spontaneous move and then need time to settle into place.3 Clinically, this manifests as visual disturbances, evidenced by the fact that 77% of toric lens wearing patients in this survey experienced fluctuating, changing, or blurred vision after rubbing their eyes. Approximately 1/3 of toric lens wearers say it can take up to 30 seconds for their vision to normalize.4 Fluctuating vision is most bothersome during certain activities, such as when driving, looking at a computer screen, or when something is felt on or under the lens (Figure 2).5

Stability Is Key to Managing Visual Fluctuations with Toric Lenses
To best manage fluctuations in vision with toric lens wear, it is important to prescribe a contact lens with the ability to return to the primary gaze orientation following rotation. Rotational recovery refers to how quickly a lens returns to the desired orientation following disruption, such as from eye rubbing.6 Each lens manufacturer of toric contact lenses utilizes a different lens stabilization design, which can impact the stability of the lens. Several stabilization designs are used to increase stability and rotational recovery ability of soft toric contact lenses (Table 1). In a study by Cairns (2010), the rotational stability of two different lens stabilization designs was evaluated.7 Results showed that when compared to lenses that utilized an Accelerated Stabilization Design, the Quick Alignment System™ design demonstrated superior mean rotational recovery and greater rotational recovery to within 1° of primary gaze orientation within one minute. Lens stabilization design can have an impact on vision correction achieved, and is one more factor to consider when recommending a toric contact lens for astigmatic patients.

Conclusion
Soft toric contact lens wearers are highly motivated by the promise of faster rotational recovery of their lenses.3 Many wish their ECP would prescribe a lens that recovers faster after rubbing their eyes.2 Therefore, when choosing the most appropriate soft toric contact lens for astigmatic patients, rotational stability needs to be considered. Practitioners can reduce the incidence of rotational issues by prescribing a lens with demonstrated rotational recovery and stability. Selecting a lens that utilizes Quick Alignment System™ stabilization has been shown to have superior rotational recovery when compared to the Accelerated Stabilization design.

References

Table 1: Lens Designs Used by Toric Soft Contact Lenses to Promote Stability and Rotational Recovery

<table>
<thead>
<tr>
<th>Design</th>
<th>How It Works</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quick Alignment System</td>
<td>The inferior portion of the contact lens has more ballast and a 360-degree comfort chamfer reduces mass at the base of the lens to help equalize the thickness around the lens periphery. A refined optic zone helps minimize variations in vertical thickness profile with power by adjusting the anterior and posterior optic zone diameters. The balanced thickness profile stabilizes the lenses through dynamic and static forces of the eye lids during a blink and open lid positions.</td>
</tr>
<tr>
<td>Accelerated Stabilization Design</td>
<td>The design utilizes four active zones near the midsuperiority of the lens to enhance stability and rotational recovery. These stabilization zones have a thicker profile compared to the rest of the lens. The stabilization zones are designed to be located within the interpalpebral aperture. Thin zones at the top and bottom of the lenses allow pressure from the eyelids to stabilize the lens by inducing its rotation.</td>
</tr>
</tbody>
</table>

Figure 1: Most frequent causes of eye rubbing with toric contact lens wear.

Debuts under lens
Eyes are itchy
When tired
When heat/AC/fan blows on face
Contact lenses have moved
Allergies are bothersome
0% 5% 10% 15% 20% 25% 30% 35% Percentage of Patients

Table 2: Occasions when toric lens wearing patients find fluctuating vision bothersome.8

| When driving | 27% |
| When looking at the computer | 27% |
| When something is felt on or under the lens | 13% |
| When tired | 29% |
| When eyes are itchy | 27% |
| When contact lenses have moved | 25% |

Percentage of Patients

Figure 2: Percentage of patients who reported experiencing rotations of toric contact lenses.