Subjective Assessments of Two Toric Silicone Hydrogel Contact Lenses After One Month of Daily Wear
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Introduction
Discontinuation or “dropout” from contact lens (CL) wear continues to trouble the contact lens industry. A recent publication indicated that 22% of those surveyed had discontinued contact lens wear permanently because of discomfort and dryness.1 Another survey has shown that 25% of users who discontinued contact lens wear cited discontinuation as their reason for discontinuation.2 This is similar to a study conducted by Weed et al who reported 27% discontinuation due to discomfort.[3]
A recent global study about contact lens prescribing revealed there had been a continuous increase in toric lens fits between 1996 and 2011.4 In light of these, fitting trends and challenges of patients discontinuing lens wear due to discomfort and dryness, it is of interest to investigate two leading silicone hydrogel toric contact lenses with regard to vision, comfort, dryness and satisfaction.

Purpose
The aim of this study was to compare subjective vision, ocular comfort, dryness, surface sensation and satisfaction provided by two toric silicone hydrogel contact lenses using a subjective questionnaire.

Methods
• This was a 1-month, subject masked, randomized, bilateral, daily wear cross-over study involving 40 habitual soft toric contact lens wearers with ages ranging from 19 to 40 years and astigmatism between 0.75 to 2.25D.
• Subjects randomly wore CooperVision Biofinity® toric (BT) or Alcon AIR OPTIX® for Astigmatism (AOA) lenses for 1-month each. Data was collected after 2 and 4 weeks of daily wear.
• Vision quality and stability were rated using a 0-100 scale (0 very poor, 100 excellent). For overall ratings a 0-10 scale was used.
• Overall surface sensation of moisture and smoothness was rated using a 5-point Likert scale (excellent, good, average, below average and poor).
• Overall satisfaction of comfort, dryness, handling, vision and lens fit were evaluated using a 4-point Likert scale (completely satisfied, somewhat satisfied, somewhat dissatisfied and completely dissatisfied).

Materials

<table>
<thead>
<tr>
<th>Biofinity toric</th>
<th>AIR OPTIX for Astigmatism</th>
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<tbody>
<tr>
<td>Material</td>
<td></td>
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<tr>
<td></td>
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<tr>
<td>Water Content (%)</td>
<td>48% Vs 33%</td>
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<tr>
<td>Base Curve (mm)</td>
<td>8.7 Vs 8.6</td>
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<tr>
<td>Diameter (mm)</td>
<td>14.5 Vs 14.5</td>
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<tr>
<td>Sphere Powers (D)</td>
<td>+6.00 To +19.00 Vs +6.00 To -10.00</td>
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<tr>
<td>Cylinder Powers (D)</td>
<td>0.75 To -1.25 Vs 0.75 To -1.25</td>
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<tr>
<td>Axes</td>
<td>10° To 180° (10° steps) Vs 10° To 180° (10° steps)</td>
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Patient Demographics
A total of sixty (60) habitual toric contact lens wearers was enrolled and completed the study.

Results

Patient Demographics (continued)
Subjects’ habitual toric lens included hydrogels and silicone hydrogel lenses in differing wear modalities (Figure 1).
• The mean age was 28.7 ± 7.6 (range 19 – 40) and there were 23 (38.3%) males and 77 (41.7%) females.
• The mean (± SD) manifest refraction was -1.31 ± 2.42 D (range ± 4.50 to -7.00 D) for the sphere and -1.38 ± 0.55 D (range ± 0.75 to 2.25 D) for the cylinder.

Figure 1. Distribution of study participants’ habitual lenses

Vision
BT subjective vision stability ratings during the day were significantly better than for AOA lenses at 4 weeks (87 vs. 82, p<0.005).
BT subjective vision quality ratings at the end of day were superior than for AOA lenses at 4 weeks (86 vs. 80, p<0.009).
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BT subjective vision quality ratings at the end of day were superior than for AOA lenses at 4 weeks (86 vs. 80, p<0.001).
BT lenses showed consistently higher ratings for vision quality and stability on insertion; during the day and at end of day than AOA lenses at 2 weeks and 4 weeks. (Figure 2).

Figure 2. Subjective vision assessments (mean ± SD)

Surface
• At 4 weeks, for patients wearing the BT lenses “excellent” was the most frequent rating for smoothness (60%) compared to “average” when patients wore the AOA lenses (23%).

Figure 3. Overall satisfaction of moistness. Weeer’s responses.

Overall ratings
Comfort ratings at insertion were better for BT than for AOA lenses at 2 weeks (87 vs. 7,7 p<0.001) and 4 weeks (86 vs. 7.1, p<0.001).
Comfort ratings prior to removal were better for BT than for AOA lenses at 2 weeks (8.7 vs. 7.4, p<0.001) and 4 weeks (8.5 vs. 6.7, p<0.001).
Overall comfort ratings were superior for BT than for AOA lenses at 2 weeks (8.8 vs. 7.6, p<0.001) and 4 weeks (8.6 vs. 6.5, p<0.001).
Dryness ratings during the day were better for BT than for AOA lenses at 2 weeks (8.7 vs. 7.6, p<0.001) and 4 weeks (8.5 vs. 7.0, p<0.001).
Dryness ratings prior to removal were superior for BT than for AOA lenses at 2 weeks (8.6 vs. 7.5, p<0.001) and 4 weeks (8.5 vs. 7.0, p<0.001).
Overall dryness ratings were superior for BT than for AOA lenses at 2 weeks (8.7 vs. 7.5, p<0.001) and 4 weeks (8.6 vs. 7.0, p<0.001).
Lens fit stability ratings were better for BT than for AOA lenses at 2 weeks (8.8 vs. 8.0, p<0.001) and 4 weeks (8.6 vs. 7.6, p<0.001).
Vision satisfaction ratings were better for BT than for AOA lenses at 2 weeks (8.7 vs. 8.0) and 4 weeks (8.5 vs. 7.6, p<0.001). Figure 4.

Figure 4. Overall satisfaction of smoothness. Weer’s responses.

Satisfaction
A higher proportion of subjects were completely satisfied with BT than AOA lenses for comfort (72% vs. 27%, p<0.001), dryness (73% vs. 23%, p<0.001), vision (63% vs. 35%, p<0.001) fit (70% vs. 36%, p<0.001) and overall (65% vs. 22%, p<0.001). Figure 6.

Figure 6. Subjective satisfaction at 1-month.

References

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