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Paper Abstracts
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Evaluation of functional vision performance of a new design silicone hydrogel lens for the correction of moderate astigmatism and presbyopia: preliminary results

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Purpose: To evaluate possible benefits in functional vision performance with a new multifocal-toric design of a silicone hydrogel lens, for the correction of moderate astigmatism and presbyopia, by comparing this lens with other lenses of similar material, correcting only the astigmatism or presbyopia.
Method: Visual performance of 15 presbyopic volunteers (age: 49±3 yrs) was assessed binocularly at two contrast levels (100%-10%). Participants were corrected for their myopic astigmatism (cyl: -1.02±0.42 D) using monthly replacement silicone-hydrogel contact lenses providing: a) toric (comfilcon A), b) multifocal-spherical (lotrafilcon B) or c) multifocal-toric correction (asmofilcon A). Visual acuity (VA) was measured at 4m, 66cm and 33cm with logMAR charts. Silent reading performance was evaluated with IReST passages (0.4 logMAR print size at 40cm screen distance). Eye movements were monitored with an infrared eyetracker. Data analysis included computation of reading speed and a range of oculomotor indices. Subjective visual measures were also assessed.
Results: VA at far was found improved with toric (-0.13±0.06 logMAR) and multifocal-toric (-0.12±0.06 logMAR) vs. multifocal-spherical (-0.08±0.10 logMAR) lens correction. High contrast VA at 66cm and 33cm distances was significantly higher with multifocal-toric vs. multifocal-spherical vs. toric lens correction; differences were more pronounced for low contrast VA. No difference was found between multifocal-toric vs. multifocal-spherical lenses. Similarly, average reading speed was faster with multifocal (301±90 wpm) and multifocal-toric (298±97 wpm) vs. toric (271±109 wpm) lenses at both contrast levels. No differences were found between multifocal-toric vs. multifocal-spherical lenses in reading speed and oculomotor indices, as was also the case for the subjective visual measures. However, the multifocal-toric lens was preferred for vision by 9/15 of participants.
Conclusions: Preliminary results show that presbyopes with moderate astigmatism, corrected with multifocal-toric lenses, may exhibit better vision for far, without presenting significant improvement in near visual acuity and reading performance, when compared to multifocal-spherical lenses.

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