

Clinical White Paper

Palomar Study: A Comparison of Visual Outcomes and Patient Preferences: Duette™ Multifocal vs. AirOptix® Aqua Multifocal Contact Lenses

February, 2013

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Duette[™]
MULTIFOCAL
CONTACT LENSES

by SynergEyes
Moving Vision Forward

The Palomar Study: A Comparison of Visual Outcomes and Patient Preferences: Duette™ Multifocal vs. AirOptix® Aqua Multifocal Contact Lenses

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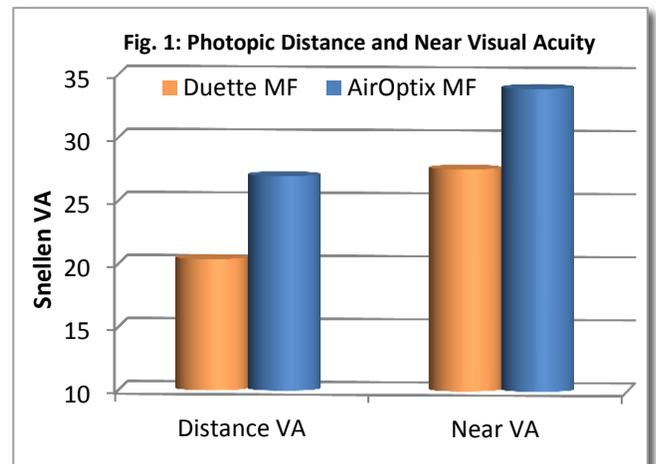
Overview

The potential presented by millions of presbyopes means eye care professionals are looking to multifocal contact lenses for assistance. Despite improvements in multifocal technology, the challenge remains that these lenses sometimes require a trade-off in distance vision to achieve functional near vision which can limit their acceptance, especially with moderate to advanced presbyopes. A new lens has been introduced that combines the superior optical quality of a RGP lens with a soft skirt that optimizes centration and patient comfort. In this paper we describe a cross-over study that assessed distance and near visual acuity in 51 presbyopes. Fifty-one subjects were consecutively enrolled at two sites and wore two different aspheric, near dominant, multifocal contact lenses: Duette Multifocal (Synergeyes, Inc., Carlsbad, CA) and AirOptix Aqua Multifocal (CibaVision, Duluth, GA). All subjects had < 2.25D of regular corneal astigmatism and < 0.75D of residual astigmatism, no history of corneal refractive treatment/surgery or ocular pathology interfering with lens wear or vision.

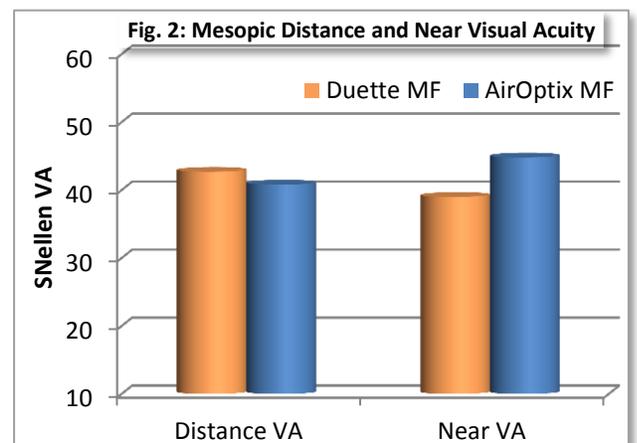
After diagnostic fitting of both lenses, AirOptix lenses were dispensed to each subject and contact lens-visual acuities were assessed at two-weeks of wear. These lenses were then discarded and Duette Multifocal lenses were dispensed to each subject with 2-week visual acuities again assessed. LogMAR distance visual acuities were recorded (Bailey-Lovie LogMAR eye chart; high contrast) as well as near visual acuity (Continuous Text Near Vision Cards at 40 cm), under photopic (>120 cd/m²) and mesopic (<90 cd/m²). A Near Activity Vision Questionnaire (NAVQ)* and lens preference survey were administered at the final exam. Outcomes were analyzed using a T-Test for Independent Samples (Microsoft Excel 2010). LogMAR values were converted to Snellen VA for graphical presentation.

Results

Photopic Vision: Under photopic conditions (**Figure 1**), distance visual acuity was significantly better with subjects wearing the Duette Multifocal lenses vs the AirOptix Multifocal (P=0.05). Near visual acuity results were also significantly better when subjects wore the Duette lenses (P<0.001). For distance vision Duette Multifocal delivered 20:20.4 vision which was better than the 20:27 for AirOptix. For near vision Duette Multifocal delivered 20:27.6 vision which was significantly better than the 20:34 vision with Air Optix Multifocal.



Mesopic Vision: Vision under low-light (mesopic) conditions was generally better when subjects wore Duette Multifocal lenses (**Figure 2**). Although differences were small for distance visual acuity (P=0.16) near visual acuity was significantly improved when subjects were wearing Duette Multifocal lenses (P=0.00), even in dim-light conditions.



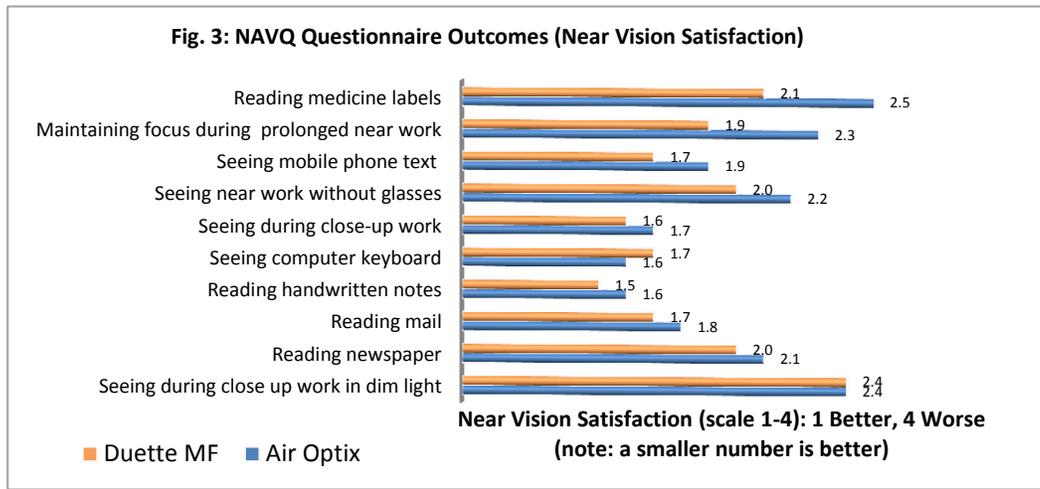
What was known

- Both near and distance acuity can be improved for many presbyopes with multifocal contact lenses.
- Minimizing the trade-off in distance vision to improve near vision is a key success parameter with multifocal contact lenses.

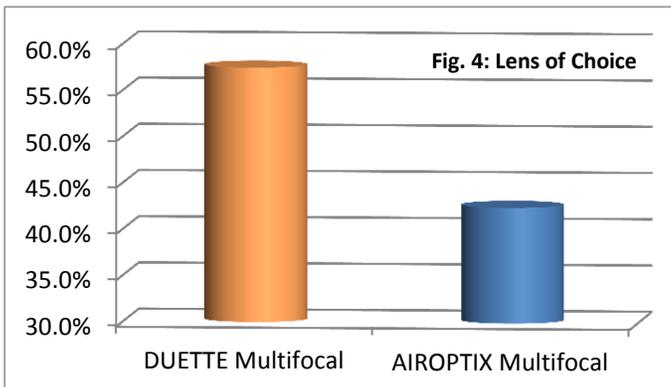
What this paper adds

- Both distance and near vision were significantly better with the Duette Multifocal lens, less trade-off was needed.
- Subjective ratings were better with the Duette Multifocal lens for nine out of ten near-vision tasks.
- Preference for the Duette Multifocal lens was related to significantly better near vision that patients experienced along with better distance vision with this contact lens.

Near Vision Questionnaire: Subjective questionnaire responses are shown in **Figure 3**. These are consistent with the superior near vision outcomes with the Duette Multifocal lens. Ratings for “Overall Satisfaction with Near Vision” were better for the Duette Multifocal as were ratings in 9/10 near vision categories. Near tasks with the greatest differences (all favoring Duette Multifocal) were: a) reading medicine labels, b) seeing mobile phone text, c) maintaining focus during prolonged near work, and d) seeing near work without glasses. Only one category favored the AirOptix lenses: “seeing the computer keyboard.”



Final Lens Choice: Six of ten subjects who expressed a choice after wearing both lenses chose the Duette Multifocal over the AirOptix (57.5% vs 42.5%; **Figure 4**). When Duette Multifocal was chosen, 85.7% of subjects stated it was due to better vision whereas only 11.1% of the subjects who chose AirOptix stated it was only due to better vision. With the AirOptix lens, 27.8% of subjects based their preference solely on better comfort/ease of use while the balance of subjects based their choice on a combination of vision, comfort and ease of use.



Discussion

In this study, the Duette Multifocal lens with RGP optics provided both better near and distance vision than the AirOptix Multifocal lens. In particular, near vision in photopic and mesopic conditions was much better with the Duette lenses. Those positive outcomes led to the majority of subjects

expressing a preference for the Duette Multifocal lens which is consistent with the NAVQ near vision activity responses. Most subjects had better near vision with the Duette Multifocal lens and those same subjects gave it better NAVQ ratings even though most of them were historically soft lens wearers who would be expected to have less enthusiasm for adapting to any new lens type.

We found that near visual acuity in low-light conditions was much better when subjects wore the Duette Multifocal lens. We believe this is because less compromise with the Duette Multifocal lens is needed in order to get the near vision patients desire, and that affected both lens preference and overall satisfaction in this study. A multifocal lens providing outstanding near vision without the need to sacrifice distance vision may therefore be the ultimate determinant when considering multifocal contact lens options for presbyopes.

This study presents quantitative data showing the Duette Multifocal lens produced significantly better distance and near visual acuity compared to a multifocal soft contact lens. That led to a majority of subjects preferring Duette Multifocal lens over the AirOptix multifocal lens. Most subjects preferred the Duette Multifocal because it produced “better vision”. The results of qualitative assessment showing preference for the Duette Multifocal lens in 9 out of 10 near vision activities, emphasizes that satisfaction can be strongly influenced by near vision success.

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*Buckhurst PJ, Wolffsohn JS, Gupta N et al. Development of a questionnaire to assess the relative subjective benefits of presbyopia correction. J Cataract Refract Surg. 2012 Jan;38(1):74-9. Reprint requests, contact szymba@synergeyes.com.