Myopia progression one-year after cessation of contrast modulation spectacle lenses

Jennifer S. Hill[1], Deborah Laughton[1], Graeme Young[2], Chris Hunt[2]

[1]SightGlass Vision

[2]Visioncare Research, Ltd.

Purpose

To investigate myopic progression in children following the cessation of contrast modulation spectacle lenses known as Diffusion Optics Technology™ (DOT) after at least 4 years of wear.

Method

Children who completed the 4-year multicenter clinical trial evaluating DOT lenses (NCT04947735) were invited to enroll in a 1-year cessation study (NCT05893979), in which the control group (n=22) continued wearing standard single vision spectacle lenses and the DOT group (n=32) were crossed over to standard single vision spectacle lenses. Axial Length (AL) and cycloplegic Spherical Equivalent Refraction (cSER) were measured at 0-, 6- and 12-months post cessation of DOT lens wear. In this study, rebound in the context of myopia control is defined as a faster axial elongation and myopia progression upon cessation of the myopia control treatment than that expected in a matched group as per the International Myopia Institute (IMI) definition.[1]

Results

Fifty-four children were enrolled, 57% female, with a mean age of 13.5 (10.8 to 15.5) years. The current available interim sample included 49 children who completed their 12-month follow-up visit (31 test and 18 control). The study initiation baseline AL and cSER mean (±SD) for the original DOT group was 24.75 (1.03) mm and -3.27 (2.01) D and the Control was 24.99 (0.73) mm and -3.77 (1.28) D. After 12-months, no significant differences in axial elongation (Test 0.17 mm 95% CI 0.14 to 0.21; Control 0.13 mm 95% CI 0.08 to 0.17, p=0.06) or myopia progression (Test -0.29 D, 95% CI -0.40 to -0.18; Control -0.14 D, 95% CI -0.28 to -0.01, p=0.08) were found between the original DOT and Control groups. There were no device-related adverse events. The visual acuities were normal and consistent between the test and control groups.

Conclusion

Twelve months after cessation of DOT spectacle lens wear, cSER and AL progression reverted to age-normative rates observed within the continuing control group. These findings indicate no rebound effect observed after cessation of treatment.

[1]Jones L, Drobe B, Gonzalez-Meijome JM, et al. IMI - Industry Guidelines and Ethical Considerations for Myopia Control Report. Invest Ophthalmol Vis Sci 2019;60:M161-M83.

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