Three-year effectiveness of myopia control contrast modulation spectacle lenses in a Canadian practice.

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Purpose

To assess the 3 years effectiveness of Diffusion Optics Technology (DOT) myopia control spectacle lenses with contrast modulation in slowing myopia progression in Asian Canadian children in a clinical setting.

Methods

This retrospective study reviewed clinical records from a private practice in Canada with myopic children ages 6 to 10 years who had worn DOT spectacle lenses for at least 3 years.
Myopia progression was determined using binocular average of manifest Spherical Equivalent Refraction (mSER;D) and axial length (AL;mm) measurements at baseline and at 3 years. There were also two age groups; younger children (Y, ages 6-7) and older children (O, ages 8-10) at the time of dispensing. Annual progression rates were approximated for each individual by dividing the observed 3 years change from baseline by the actual elapsed follow-up time expressed in years and tested for statistical significance using independent t-test.

Results

The analysis included 49 children who completed 3 years of follow up (23 M, 26 F; mean age ± SD, 8.1 ± 1.3 years), including 22 younger children (45%) and 27 older children (55%). Baseline mean mSER for the whole cohort was -2.40 ± 1.27D. Compared to the older group, the younger group was slightly less myopic, although the difference was not significant (Y -2.25 ± 1.30 D; O -2.52 ± 1.26 D; p=0.46) and had significantly shorter mean AL (Y 23.75 ± 0.85mm; O 24.37 ± 0.71mm; p=0.01). After 3 years, the mean mSER change for the entire cohort from baseline was -0.58 ± 0.63D (Y -0.55 ± 0.78D, O -0.60 ± 0.49D, p=0.79). Mean AL change was 0.51 ± 0.36 mm overall, consisting of 0.65 ± 0.40 mm for the younger group and 0.40 ± 0.28 mm for the older group (p=0.02). The annual progression rates were 0.18 D/year for mSER and 0.16 mm/year for AL. Younger children demonstrated faster axial elongation than older children (0.21 vs 0.12 mm/year, p=0.01), while no significant difference was observed in refractive progression rates between the two age groups (p=0.89).

Compared with published SCORM-predicted axial elongation rates for untreated myopic children, DOT lens wearers in this practice were associated with significantly slower axial length progression (0.51 mm over 3 years vs. predicted 0.95 mm).

Conclusion

These 3-year clinical results demonstrated the sustained efficacy of DOT myopia control spectacle lenses in managing myopia progression in children age 6–10 years. Although younger

children showed the expected faster axial length elongation, but refractive progression remained well controlled in both age groups.

Reference:

Saw SM, Tong L, Chua WH, Chia KS, Koh D, Tan DT, Katz J. Incidence and progression of myopia in Singaporean school children. Invest Ophthalmol Vis Sci. 2005 Jan;46(1):51-7. doi: 10.1167/iovs.04-0565. PMID: 15623754.