Seven years longitudinal study on myopic children wearing orthokeratology lenses

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Purpose. To interview, and to assess corneal condition and progression of eyeball elongation in children/teens who participated in ortho-k studies for myopic control seven years ago.

Method. Telephone interviews were conducted on 50 subjects who participated in our previous ortho-k studies to confirm continuation of treatment and obtain information about significant adverse events associated with lens wear. Subjects who had been on ortho-k treatment for seven years were invited to return for regular eye examination and to determine eyeball elongation in terms of change in vitreous chamber depth (VCD).

Results. Eleven subjects had stopped the treatment, and there were two reports of inflammation/infection. Eighteen subjects could not be reached. Only 16 subjects (age 13-18 years old) had been on ortho-k treatment for seven years.
Grade 2 central corneal staining, due to the embedment of debris, was observed in one subject, and the staining resolved 6 hours after of lens removal. Otherwise, no significant changes in corneal and conjunctival conditions were observed.
There was a gradual increase in VCD during the 7-year of lens wear. The mean change in VCD in the right and left eyes during ortho-k lens wear were 0.70mm and 0.58mm, respectively, i.e. average annual increase of 0.10mm and 0.08mm, respectively in the right and left eyes. The annual increase in VCD was fairly constant over the study period.

Conclusion. Unlike other myopic control treatment, ortho-k continued to show slow eyeball elongation even after two years of lens wear. The progression of axial elongation of the eyeball was on average 0.25D per year for this group of children.

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