Abstract Title:	**Overnight Orthokeratology Lens Wear Slows Axial Eye Growth in Myopic Children**
Presentation Start/End Time:	Monday, May 03, 2010, 1:45 PM - 3:30 PM
Session Number:	259
Session Title:	Mechanisms of Emmetropization❸
Location:	Hall B/C
Reviewing Code:	283 myopia: mechanisms of emmetropization - AP
Author Block:	*H.A. Swarbrick, A. Alharbi, K. Watt, E. Lum.* Sch of Optometry/Vision Sci, Univ of New South Wales, Kensington, Sydney, Australia.
Keywords:	604 myopia, 477 contact lens, 674 refractive error development

Abstract Body:

Purpose:
To investigate the effect of overnight orthokeratology (OK) contact lens wear on changes in axial length in East Asian children with progressive myopia.

Methods:
Fourteen myopic children (age 10-17 years) of East Asian ethnicity were fitted with reverse geometry lenses (BE; Capricornia Contact Lens) for overnight OK in one eye, and conventional rigid gas-permeable (GP) lenses (J-Contour; Capricornia) for daily wear in the contralateral eye, in Boston XO2 material (nominal ISO/Fatt Dk 141). Lens/eye combinations were assigned randomly, and lens fittings and adaptation to rigid lenses were optimised prior to study commencement. Lenses were worn for a six-month period. After a two-week washout without lens wear, lens wear was continued for a further 6 months with lens-eye combinations reversed. Axial length was monitored at baseline and 3-month intervals using the IOLMaster (Zeiss, Germany).

Results:
Baseline axial length was 24.96 ± 1.00 mm and 24.97 ±

0.95 mm in the OK and conventional GP lens-wearing eyes respectively. After 6 months of lens wear there was a statistically significant difference in axial length between the eyes (RM-ANOVA, F=3.049, p=0.012). Axial length had increased significantly by 0.06 ± 0.09 mm in the GP eye (protected post-hoc paired t-test, p=0.014), but showed no significant change (-0.02 ± 0.08 mm) in the OK eye (p=0.348). During the second 6-month period, axial length in the GP eye increased by 0.11 ± 0.11 mm (p=0.002), whereas in the OK eye there was no significant change in axial length (-0.02 ± 0.12 mm; p=0.460). During both lens-wearing periods, there was a significant decrease in axial length at 3 months in the OK lens-wearing eye (p<0.038), followed by apparent eye growth to return to baseline values. However, the GP lens-wearing eye showed progressive axial length growth.

Conclusions:

During 6 months of overnight OK lens wear, axial length as measured by the IOLMaster showed an initial decrease followed by a return to baseline, whereas eye growth was progressive in GP lens wear. This provides evidence that, at least in the initial months of lens wear, overnight OK slows myopia progression compared to daily wear of conventional GP lenses.

CommercialRelationships: **H.A. Swarbrick:** F; Bausch & Lomb Boston, BE Enterprises, Capricornia Contact Lens. **A. Alharbi:** F; Bausch & Lomb Boston, BE Enterprises, Capricornia Contact Lens. **K. Watt:** F; Bausch & Lomb Boston, BE Enterprises, Capricornia Contact Lens. **E. Lum:** F; Bausch & Lomb Boston, BE Enterprises, Capricornia Contact Lens.

Support: Funded under Australian Government's ARC Linkage Scheme

Clinical Trial: www.anzctr.org.au ACTRN12608000007336