Abstract for BCLA

Title of presentation:
Corneal biomechanical changes in long-term orthokeratology on myopic and astigmatic children

Author(s) and instruction(s):
Connie Chen
Sin Wan Cheung, MPhil, FAAO
Pauline Cho, PhD, FAAO, FBCLA

Abstract:

Purpose
To investigate corneal biomechanical changes with long-term orthokeratology (ortho-k) treatment

Method
Thirty-four (18F, 16M) subjects aged 6-12 year old with myopia more than -0.50D, with-the-rule astigmatism of -1.25D or above and unremarkable ocular and general conditions were fitted with the Menicon Z Night Toric Lens (NKL Contactlenzen B.V., Emmen, The Netherlands). Corneal hysteresis (CH) and corneal resistance factor (CRF) were measured using the Ocular Response Analyser (ORA; Reichert Ophthalmic Instruments, Buffalo, NY, USA) at baseline, 1-month, 6-month, 12-month, and 18-month after commencing lens wear. The results from the right eyes are reported.

Results
The mean age of the subjects was 8.7 ± 1.53 and their mean refractive error (SER) was -3.50 ± 1.42 D. Mean baseline CH and CRF were 11.01 ± 1.4 mmHg and 11.03 ± 1.59 mmHg, respectively. Only significant change was observed in CRF after commencement of ortho-k lens wear. CRF reduced from 11.03 mmHg at baseline to 10.17 mmHg after 1-month of lens wear (paired t-test, t = 3.3, p < 0.002) and no further change was observed at subsequent visits with continued ortho-k lens wear.

Conclusions
Ortho-k has an initial effect on CRF, but only during the ortho-k stabilization period. No further changes was observed after 1-month of ortho-k treatment. CH is unaffected by ortho-k treatment.

Acknowledgements
This study was supported by a Collaborative Research Agreement between The Hong Kong Polytechnic University (PolyU) and Menicon Co, Japan, and the facilities used are supported by a Niche Area Funding (J-BB7P) from PolyU.