One of the concerns of myopia correction by contact lens corneal molding is the thinning of central epithelium of the cornea induced by a direct compression of the optical zone. As it happened in the radial keratotomy or intrastromal corneal rings procedures, we think that it is possible to bring on a central flattening, working in the periphery of the cornea and we designed a lens geometry that would aid the displacement of peripheral epithelium towards the optical zone. Our biomechanical hypothesis is that the central flattening might be secondary to a mid-peripheral steepening, induced by a displacement of the epithelium that results from a proper compression in the alignment zone of this lens.

**PURPOSE**

We developed a new hexa-curve reverse geometry lens design (fig. 2) based on a biconic model that attempts to mold the periphery of the cornea with a minimum compression in the centre of the lens. A prospective, consecutive study was performed to evaluate the corneal response and central corneal thickness (CCT) changes after overnight orthokeratology by means of this customized hexa-curve reverse geometry lens in hyper-Dk gas-permeable material.

**RESULTS**

The corneal response rapidly with significant (p<0.05) central corneal flattening and improvement in visual acuity after the first night of contact lens wear. The corneal shape changed from prolate to oblate after one night of wear. By the end of one week, all corneal and visual changes had reached a maximal level and remained fairly stable during the day. These changes were sustained at the following visits. Biomicroscopy showed no significant ocular adverse events.

**DISCUSSION**

This difference could be caused by the different geometry and behavior of the lenses.

The absence of change found in the central pachymetry data suggests that this overnight contact lens design can successfully flatten the cornea without direct compression of the center of the cornea. The absence of change in CCT during the day seems to exclude a masking effect due to edema. Contrary to our finding, the majority of previous studies reported that orthokeratology caused epithelial and total central corneal thinning. This difference could be caused by differing lens geometry and differing lens behavior during overnight.

**REFERENCES**

1. Calossi A, M. M. R., Romano, None; F. Romano, None; G. Ferraoli, None

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