Orthokeratology (OK) is a corneal reshaping technique that uses rigid reverse geometry contact lenses, which are used to reshape the cornea in a non-surgical way during overnight wear. These lenses are typically made of high oxygen permeable materials to allow for adequate oxygen supply to the corneal epithelium. The technique has been described as the “gold standard” for many years because of its demonstrated ease of use, validity, and reliability.

Newer technologies are now available for corneal thickness measurement, including optical coherence tomography (OCT, e.g. Visante, RTVue). Other researchers have demonstrated acceptable agreement between US and newer techniques.1-4,5

The Sonogage US pachometer has been used to challenge this conventional view of the mechanism of OK, has been described as the “gold standard” for many years because of its demonstrated ease of use, validity, and reliability. This research has demonstrated acceptable agreement between US and newer techniques.

In our study, the Sonogage US pachometer overestimated total corneal thickness compared to OCT, as reported previously in the literature,1,3,4 but the two instruments showed acceptable correlation.

The Sonogage US pachometer has been claimed to measure corneal epithelial thickness in vivo.11 Previous research has demonstrated good repeatability for epithelial measurements in normal human eyes and accurate in vivo.4,12 This research has demonstrated acceptable agreement between US and newer techniques.

The difference between epithelial thickness in non-contact lens wearers and OK lens wearers, as measured by OCT, is consistent with the conventional view of the mechanism of OK in altering anterior corneal shape by central epithelial thinning.

CONCLUSIONS

The Sonogage US pachometer tends to give thicker measurements for total corneal thickness than high resolution OCT.

The Sonogage US pachometer seems not to be capable of epithelial thickness measurement in vivo.