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## Central Corneal Thickness: A Retrospective Comparison of Handheld Ultrasound Pachymetry and Optical Biometric Analysis Measurements

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# Central Corneal Thickness: A Retrospective Comparison of Handheld Ultrasound Pachymetry and Optical Biometric Analysis Measurements

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Abstract:

## **Purpose**

To determine if the measure of central cornea thickness among suspected and confirmed glaucomatous patients is significantly influenced by instrument device.

## **Methods**

We retrospectively examined the charts of all patients having a central corneal thickness (CCT) measured with both ultrasound pachymetry and IOL Master 700 at the Kresge Eye Institute within the past year. Intraocular pressure and demographic data including age and race, were also collected. Significant corneal disease such as Fuchs corneal dystrophy, other corneal dystrophies, corneal transplant, and corneal edema were excluded. Statistical analysis of the paired CCT measurements were performed with a paired t-test and regression analysis.

## **Results**

The total number of patients having a CCT measured with both ultrasound pachymetry and IOLMaster700 was 59. Mean CCT measured with ultrasound pachymetry was  $539.38 \pm 49.56 \mu\text{m}$  (n=118). Mean CCT measured with IOLMaster700 was  $536.83 \pm 42.52 \mu\text{m}$  (n=112). The intraparticipant mean of differences between the ultrasound pachymetry and the IOLMaster700 was  $3.16 \pm 25 \mu\text{m}$ . Analysis with a paired t-test did not find a significant difference between the two groups (p=0.19). A regression analysis of the paired CCTs yielded an R<sup>2</sup> value of 0.74.

## **Conclusion**

There is no significant difference between CCT measurements taken with handheld ultrasound pachymetry compared to the IOL Master 700. More data is warranted to confirm, but the IOL Master 700 may yield lower variability and a lower mean CCT, possibly due to greater instrument precision and increased likelihood of a central measurement. In practice, the IOL Master 700 may provide a more reliable measure of central cornea thickness when compared with ultrasound pachymetry.