

Where on the Cornea Should Intra-Ocular Pressure be Measured - Centrally, Nasally, Temporally or Inferiorly?

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Purpose: To evaluate influence of central corneal thickness (CCT) on intraocular pressure (IOP) measurements made with the ICare tonometer (Tiolat, Finland) and Pentacam for corneal thickness measurements on different locations on cornea without influence of topical anaesthetics obtaining data on variations of IOP measurements on different sites and corneal thicknesses.

Setting: Vision4You, Lund, Sweden

Method: CCT was recorded for right and left eye of each of 50 untreated patients without ocular hypertension and glaucoma attending the clinic. Measurements were carried out with the Pentacam. For each of the selected eyes, IOP was measured with the ICare from Tiolate in Finland. IOP was measured centrally on the cornea, temporally, nasally and inferiorly. At each measure point 15 readings were taken and the mean value used. The touch of the probe is so light so it will not cause aftereffects after each measurement. No topical anaesthetic was used so normal biomechanics of cornea was not disturbed.

Results: A significant association between measured IOP and CCT was found. The variations between the different measurement locations were also statistically significant, and even more so when the IOP was calibrated taking CCT into account. The highest IOP measurement location was inferiorly and the lowest nasally and these results are also of statistical significance. The central measurement of IOP was a typical mean of the other readings. These findings are of great clinical relevance and a rethinking might be necessary when using IOP as a screening tool for POAG and OHT.

Conclusions: Requiring nomograms incorporating corneal thickness measuring IOP is premature. The need for further studies with larger numbers cannot be debated. Further, rememberer that it is the peak of IOP rather than mean IOP which is the greatest determinator for visual loss, and that peak measurement location needs to found.

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