



Intraocular pressure is underestimated in eyes with a thin cornea

The Science behind the Tip

Variability in central corneal thickness (CCT) is a potent confounder of applanation tonometry techniques such as Goldmann applanation tonometry (GAT)¹ and non-contact or air puff tonometry (NCT)². GAT most accurately reflects intraocular pressure (IOP) when CCT is 520 μm ¹. At this time there is no accepted algorithm for correcting IOP measurements for deviations from this value, but it is obvious that low CCT values can result in gross underestimation of IOP.

Clinical implications are not minor. If pachymetry is not adopted as part of the routine eye exam, elevated IOP can be missed in eyes with a thin cornea, and the diagnosis of glaucoma delayed. It is important to examine the optic disc even when IOP is "normal", and to test visual fields in case of a suspect disc. If glaucoma damage is documented, pachymetry can avoid misclassification of patients as having normal tension glaucoma.

Myopic individuals having had LASIK are particularly at risk of having undetected glaucoma. GAT and NCT will grossly underestimate IOP in LASIK-thinned corneas of a mere 400 μm . LASIK-altered corneal curvature and rigidity contribute to erroneously low IOP readings³. Furthermore, detecting glaucomatous damage is often difficult in highly myopic discs. Considering that, in addition, myopia is an independent glaucoma risk factor⁴, caution is warranted in post-LASIK patients.

References

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