

Intra-ocular pressure measurement in a patient with a thin, thick or abnormal cornea

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As a fundamental component of the ocular examination, accurate measurement of intra-ocular pressure (IOP) facilitates the management of patients with established glaucoma and the identification of patients with an elevated risk of developing glaucoma. For over 70 years, the most common method of measuring IOP has been by Goldmann Applanation Tonometry (GAT), largely on account of its low cost and ease of use.

As we understand corneal biomechanics better, we appreciate increasingly GAT's limitations. We overestimate IOP in thick corneas and underestimate it in thin corneas. Algorithms to correct for Central Corneal Thickness (CCT) to estimate IOP oversimplify the effects of corneal biomechanics: corneal thickness is but one component of a complex interaction between the viscous and elastic properties of the cornea, which in combination influence IOP measurements in unpredictable ways. This is especially so in patients with abnormal and/or surgically altered corneal biomechanics.

Newer methods of IOP estimation, including Dynamic Contour Tonometry and the Ocular Response Analyzer are alternative methods to measure IOP, particularly in [patients](#) with abnormal corneas.

While there is no single method which provides an easy, quick and accurate result in all cases, the practitioner must rely on well established methods informed by an understanding of their limitations. With ongoing research, new techniques promise to increase our understanding

of the complex interplay between the cornea and potential inaccuracies in the measurement of IOP.

More information: Colin I. Clement et al, Intra-Ocular Pressure Measurement in a Patient with a Thin, Thick or Abnormal Cornea, *The Open Ophthalmology Journal* (2016). [DOI: 10.2174/1874364101610010035](https://doi.org/10.2174/1874364101610010035)

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