

Comparison of Tonopachy with Goldmann Applanation Tonometry and Ultrasound Pachymetry

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Objective: To compare the efficacy of Tonopachy (non-contact combined tonometry and pachymetry) with Goldmann applanation tonometry (GAT) and ultrasound pachymetry.

Methods: This study was a cross-sectional study in tertiary eye-care hospital. Out-patients with regular cornea were recruited into the study. Intraocular pressure (IOP) and central corneal thickness (CCT) were assessed with Tonopachy by one masked technician. Subsequently, IOP was measured with GAT by two masked clinicians. Then, central corneal thickness was measured with ultrasound pachymetry by another masked technician. Bland-Altman and linear regression analysis were used to determine agreement of Tonopachy with GAT and ultrasound pachymetry.

Results: 200 eyes of 100 patients (male 44, female 56) were included into the study. Mean IOP and CCT from Tonopachy were 13.12 ± 3.60 mmHg and 531.87 ± 34.62 μ m respectively. Mean IOP from GAT was 15.38 ± 3.62 mmHg and mean CCT from ultrasound pachymetry was 513.90 ± 34.71 μ m.

Bland-Altman analysis showed that Tonopachy underestimated IOP readings by 2.25 mmHg compared with GAT and overestimated CCT readings by 17.97 μ m compared with ultrasound pachymetry. However, linear regression analysis showed a statistically significant relationship of IOP readings between Tonopachy and GAT ($p < 0.001$). In addition, there was

also a statistically significant relationship of CCT measurement between Tonopachy and ultrasound pachymetry ($p < 0.001$).

Conclusion: Tonopachy had a positive and statistically significant relationship with Goldmann applanation tonometry and ultrasound pachymetry. The advantages are fast, easy and noninvasive technique. Hence, Tonopachy seems to be a good alternative method for combined IOP and CCT measurements.

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