

## **Clinical comparison of the Diaton and the Non-contact Tonometers with the Goldmann applanation tonometer in glaucoma patients**

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**Purpose:** Study of intraocular pressure evaluation (IOP) reliability using non-invasive devices, which require no anesthesia: transpalpebral scleral Diaton tonometer and non-contact pneumotonometer (NCT).

**Method:** Here the prospective comparative case series clinical study is presented. 87 patients (146 eyes) suffered from glaucoma (m:f = 51:36; age distribution: 29-85 years) were examined. For comparison IOP values received with Goldmann applanation tonometer (GAT) using the traditional methodology and digital mean values received with Diaton and NTC were used.

**Results:** Mean IOP was 17,4±7,6 mmHg with GAT, 16,7±5,58 mmHg with Diaton, 21,4±9,13 mmHg with NCT. Minimum IOP value was 6,0 mmHg with GAT, 6,0 mmHg with Diaton, 5,0 mmHg with NCT; maximum value was 40,0 mm Hg with GAT, 36,0 mmHg with Diaton, 47,0 mmHg with NCT. There was no significant difference of IOP values ( $t = -0,51$ ,  $p < 0,001$ ). The Pearson's correlation coefficient was  $r=0,89$ ,  $p < 0,001$  between GAT and Diaton;  $r=0,87$ ,  $p < 0,001$  between GAT and NCT. There was observed high correlation of both tonometers with GAT in IOP range up to 30 mm Hg. In case of IOP significant increase NCT showed IOP overestimation up to 7 mm Hg; Diaton showed IOP underestimation up to 4 mm Hg.

**Conclusions:** The study shows high reliability of transpalpebral scleral Diaton tonometer enough for clinical purpose. It has both accuracy correlating with GAT and NCT's safety and operating speed. Diaton advantage is the possibility to evaluate IOP in cornea pathology, which is very important in glaucoma patients after corneal including laser surgeries.

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