

The Tonomat Applanation Tonometer

Clinical Comparison with the Schiøtz Tonometer
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This study is an evaluation of a new tonometer: the Tonomat. Like its prototype, the Maklakov tonometer, the Tonomat is a hand-held, constant-force applanation tonometer. The Tonomat, designed by us, is intended to meet present-day requirements for ease of handling, precision of construction, and hygienic standards. Having no moving parts, the instrument is always in calibration and is, for all practical purposes, friction-free in its action.

Three years ago, we introduced another version of the Maklakov tonometer, the Applanometer, which has ceramic endplates that can be sterilized by flaming.^{1,2} In the case of the Tonomat, sterilization procedures have become obsolete, because the endplates are disposable, and a clean, new endplate is used for each patient. Any possibility of cross-infection is thus eliminated.

The Tonomat and its separate parts are shown in Fig. 1. The working portion is a metal probe which slides freely within a tubular handle. The lower end of the probe bears the detachable plastic endplate. The diameter of the endplate is 9 mm, while its applanating surface is slightly smaller, with a diameter of 8.7 mm. Two small depressions, placed marginally and at diametrically opposite points of the endplate, serve to orient the impression made by the cornea with reference to its horizontal or vertical meridian. This feature should prove especially useful in cases of high astigmatism and other irregularities of the corneal curvature.

The probe is made of stainless steel and consists of a rod-shaped plunger and a cylindrical collar. The collar forms the upper end of the probe and serves to retain it within the handle; it also helps stabilize the probe as it approaches the

eye. The entire probe assembly, including the endplate, weighs 5 grams.

The tubular handle of the Tonomat acts as a guide for the assembly by allowing it to slide freely within the handle after the endplate has come to rest on the cornea.

METHOD

The sample upon which this study is based consisted of 500 eyes tested with the Tonomat and the electronic Schiøtz tonometer. All measurements were made by the same operator. Two drops of proparacaine hydrochloride (Ophthetic) 0.5% were instilled into each eye 2 minutes before beginning the measurements.

First, the Tonomat was used on each patient and then the Schiøtz tonometer. The patient was placed in a supine position and was directed to gaze at a fixation target situated directly overhead, 1 meter above his fixing eye. The right eye was always tested first.

The Tonomat employed was representative of the current production model.* Four measurements were made on each eye, a new disposable endplate being used for each patient. Every endplate was inspected to ascertain that it was free of imperfections, particular attention being paid to the applanating surface. No defective endplates were encountered in the entire series.

The applanating surface of the endplate was coated, by means of a cotton-tipped applicator, with a viscous suspension of mild silver protein, N.F., Lot #16506. The instrument was poised 2mm above the cornea for about 2 seconds, and was then lowered slowly onto the center of the cornea. The weight of the plunger was allowed to rest on the cornea for a fraction of a second and the tonometer was immediately lifted in a vertical direction.

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