

**A Comparative Study Between the Goldmann
and Non-Contact Tonometry in the
Postoperative Eye**

*A Thesis Submitted for the partial fulfillment of the
Master Degree of Ophthalmology*
FACULTY OF MEDICINE AIN - SHAMS UNIVERSITY

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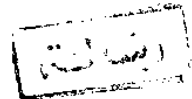
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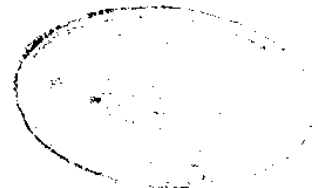
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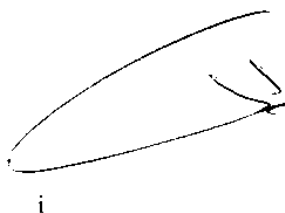
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List of abbreviations

AT	Applanation tonometer
CT	Contact tonometer
ECCE	Extracapsular cataract extraction
Gold	Goldmann
ICCE	Intracapsular cataract extraction
IMSC	Immature senile cataract
IOP	Intraocular pressure
IOL	Intraocular lens
LT	Left
MSC	Mature senile cataract
NCT	Non- contact tonometer
Pre	preoperative
Post	postoperative
Puls	Pulsair
RT	Right
SST	Subscleral trabeculectomy
SD	Standard deviation

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Last but not least, I am also very grateful to my mother, my father and my brother who created the atmosphere which allowed the progress of my career.

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AIM OF THE WORK

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This study was directed towards assessing the reliability of Non- Contact tonometers (Keeler Pulsair 2000) in comparison with the Goldmann applanation tonometer in the early postoperative period following cataract surgery.

INTRODUCTION

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The importance of measuring the intraocular pressure [IOP] in the postoperative patient is well recognized. The ophthalmologic surgeon uses the value of postoperative IOP together with other data to either confirm a smooth postoperative course or for early diagnosis of various postoperative complications. Taking cataract surgery as an example, several studies have shown that an early postoperative rise in IOP commonly occurs and that the IOP was found to exceed 30 mm Hg at 22 hours after surgery in 8 % of extracapsular procedures even without the use of viscoelastic materials (Percival, 1983). Most ophthalmic surgeons routinely measure the IOP after any intraocular procedure to identify ocular hyper- or hypotension. In general, several groups of instruments (Tonometers) have been developed, each group depending on a different physical principle to accurately measure the IOP. These include :

A- Applanation tonometers [AT] :

These measure the force needed to flatten (applanate) a specified area of the cornea , e.g.: 1- The Goldmann applanation tonometer

2- Airpuff tonometers

3- Mackay-Marg tonometers (some authors consider it a combination of applanation and indentation types)

4- Pneumato-tonometers

B- Indentation tonometry: namely the Shiotz tonometer. This type measures the indentation of cornea produced by a given weight.

The Goldmann applanation tonometer is considered up till now the most accurate clinical method to measure the IOP. However it is realized that all forms of tonometry which need direct contact with the ocular surface have certain drawbacks in addition to the difficulties occurring in the postoperative patient.

These drawbacks include:

- 1- Postoperative lid edema usually requiring manual elevation of the lid.
- 2- Postoperative increased tear meniscus.
- 3- Patient non-compliance.
- 4- Risk of cross-infection by organisms on the applanating surface; e.g.:
 - Adenovirus 8 (Dawson et al., 1970)
 - HIV (Human immunodeficiency virus) (Fujikawa et al., 1986)
 - Bacteria (e.g. Fluorescein contaminated by pseudomonas bacteria)
- 5- The need for surface anesthesia drops and Fluorescein stain.

Air Puff tonometry in measuring Postoperative IOP :

The previous drawbacks of contact tonometry have been an incentive to provide an accurate and more safe method for measuring the IOP in the postoperative patient that does not need direct contact with the globe. Air puff tonometers , introduced recently , measure IOP using the principle of applanation tonometry using a graded jet of air and thus needing no contact with the globe .