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Faculty of Medicine  
Research Ethics Committee

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Scientific Research Ethics Committee

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Research Ethics Committee  
Federal Wide Assurance (FWA)  
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IRB0010038

### Research Ethics Committee Review Report

Approval Code : 36264PR1310100/12/25  
Name of the PI : TAMER IBRAHIM ABDELHALIM  
Position : Assistant Professor  
Name of the Department : Ophthalmology

### Measuring the Changes of the Intraocular Pressure after Corneal Laser Refractive Surgery Using Different Techniques

Type of the Research: MS ☐ MD ☐ Promotion Research ☒

Project ☐

Approved ☒ Disapproved ☐ Approved after Modification ☐

Date: 04.12.2025

#### Signed by:

- Chief of Ethics Committee: Prof. Dr. Magdy Eisa

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- The Seal and Emblem of R E C – [Research Ethics Committee] – the Faculty of Medicine – Tanta University – Scientific Research Ethics Committee

We hereby certify that this is a true and accurate translation of attached document.

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جامعة طنطا  
كلية الطب  
لجنة أخلاقيات البحث

## Research Ethics Committee Review Report

Approval Code: 36264PR1310100/12/25

Name of the PI: تامر إبراهيم عبد الحليم

Position: استاذ مساعد

Name of the Departm: طب و جراحه العين

Measuring the changes of the intraocular pressure after corneal laser refractive surgery  
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متابعة التغيرات التي تحدث في ضغط العين بعد اجراء عمليه تصحيح الابصار باستخدام تقنيات متعددة

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Date 4 /12/ 2025

Chief of Ethics committee

Prof. Dr Magdy Eisa



# Measuring the changes of the intraocular pressure after corneal laser refractive surgery using different techniques

Research Project  
By

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2025

# متابعة التغيرات التي تحدث في ضغط العين بعد اجراء عمليات تصحيح الابصار باستخدام تقنيات متعددة

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## **Introduction**

Laser in situ keratomileusis (LASIK) has been considered to be the gold standard for correction of myopia and myopic astigmatism [1]. However, due to the potential risk of visually threatening flap-related complications such as traumatic flap dislocations, wrinkles, folds, epithelial ingrowth leading to flap melting and post-LASIK ectasia, recently there has been a resurgence of surface ablation procedures such as photorefractive keratectomy (PRK) [2]. However, PRK was found to be safe and effective in treating lower degrees of myopia, due to risk of haze and regression in higher myopic corrections [3]. Although the risk of haze has reduced significantly by the use of mitomycin-C, this modality is mainly preferred for low myopia [4]. Recently, application of femtosecond laser technology to LASIK flap creation has increased greatly since its introduction. These lasers have improved the safety and predictability of the lamellar incision step. The majority of the femtosecond laser-assisted flap complications can be well managed without significant effects on refractive outcomes. [5]

The Corvis ST device is widely used in the clinical evaluation of corneal biomechanics. It is a non-contact tonometer that uses an ultrahigh-speed Scheimpflug camera to monitor corneal behaviour during an air-puff test. This allows visualization of a large set of biomechanical deformation [6].

Machine learning techniques have repeatedly shown their usefulness in ophthalmology as an objective to diagnose certain eye conditions. Glaucoma detection is one of the ocular pathologies where the most efforts regarding machine learning implementation have been made. Corneal densitometry was previously investigated as a valuable feature for detection of glaucoma suspect [7]

### **Aim of the study**

To evaluate the changes that occur in the intraocular pressure after corneal refractive surgery either PRK , LASIK and femtosecond laser by using Corvis CT results and applanation tonometer

## **Patient and methods**

### **Study design:**

This study will be prospective study. 50 Patients who will undergo refractive surgery referred from the out-patient clinic of Tanta University hospital between December 2025 and December 2026 will be included in the study . The patient will be randomly selected to do either LASIK, PRK or femtosecond laser LASIK

### **Inclusion criteria:**

Patients who will undergo refractive surgery either PRK, LASIK or femtosecond laser with age between 19 and 35 years old , Myopia range from (-2.00 to -6.00 Diopter) and to maintain stability of the data we will use only the right eye of each patient

### **Exclusion criteria:**

- Kertoconus.
- Corneal scarring.
- Previous corneal infections.
- Minimum corneal thickness at the thinnest location less than 400  $\mu\text{m}$ .
- History of uveitis or ocular allergy.
- Pre-existing glaucoma.

**Data collection will include:**

**Preoperative and postoperative Evaluation:** Age, sex, uncorrected distance visual acuity (UDVA), corrected distance visual acuity (CDVA), manifest and cycloplegic refraction, Slit lamp biomicroscopy, fundus examination , Central corneal thickness (CCT) and average Keratometer (K)

-Intraocular pressure will be measured by two methods : Corvis CT and applanation tonometer for each patient and will be recorded

-The data collected will be before that laser surgery and one month after surgery

The idea of this research will be explained in detail to the participants. Their informed consent will be obtained before the commencement of the research project, and the subject will be kept fully apprised of all consequences. Every participant will have a code number. The results of this research will be used only for scientific purposes. Privacy and confidentiality of the subjects shall be maintained and without the consent of the subject, no disclosure will be made. The participant is voluntary and all subjects may discontinue participation in the research at any time without penalty or loss of benefit.

### **Statistical analysis**

Categorical variables were analyzed using the Chi-square test or Fisher's exact test, and continuous variables were analyzed using Student's t-test, via SPSS software (version 20, IBM, Armonk, New York, USA). A P value < 0.05 will be considered statistically significant.



## **Results**

The results obtained will be tabulated and analyzed.

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