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بسم اللّه الرحمن الرحيم

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التوثيق الالكتروني والميكروفيلم

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جامعة عين شمس

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بالرسالة صفحات
لم ترد بالأصل

Assessment of the eye for further surgery after LASIK

Essay

Submitted for Partial Fulfillment of the Requirement of Master Degree in Ophthalmology

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بسم الله الرحمن الرحيم

(قالوا سبحَانك لا علم لنا
إلا ما علمتنا إنّك أنت
العليم الحكيم)

صدق الله العظيم

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List of Abbreviations

APC	**Antigen presenting cells**
BM	**Epithelial basement membrane**
CCT	**Central corneal thickness**
CMTF	**A confocal microscopy through focusing**
D	**Diopter**
DCT	**Dynamic contour tonometer**
DLK	**Diffuse Lamellar Keratitis**
EGF	**Epidermal growth factor**
GAT	**Goldmann applanation tonometry**
GDx	**scanning laser polarimeter**
HGF	**Hepatocyte growth factor**
INF	**Average thickness of the inferior 120˚ of the calculation circle**
IvCM	**In vivo confocal microscopy**
IOL	**Intra ocular lens**
IOP	**Intra ocular pressure**
LASEK	**Laser Assisted Sub-Epithelial Keratectomy**
LASIK	**Laser assisted in situ keratomileusis**
NFI	**It is a global measure based on the entire RNFL thickness map calculating using an advanced form of neural network to discriminate normal from glaucoma**
ORA	**Ocular Response Analyzer**

PRK	**Photo refractive keratectomy**
RNFL	**Retinal nerve fibre layer thickness**
SD	**This measure represents the standard deviation of the values contained in the calculation circle**
SLP	**Scanning laser polarimetry**
SUP	**The average RNFL thickness in the superior 120˚ of the calculation circle**
TGF-α	**Transforming growth factor**
TSCM	**Tandem scanning confocal microscope**
TSNIT	**The average RNFL thickness around the calculation circle**
VCC	**Variable corneal polarisation compensator**

Introduction:

Introduction:

LASIK is close to *Barraquer's* invention of the early *1950s*, where a corneal button was frozen and modified after removal with a microkeratome. In LASIK, a mechanical microkeratome, or more recently a femtosecond laser, creates a corneal flap of 100-200 μm in the anterior part of the stroma and epithelium. The microkeratome has an oscillating blade to cut the flap after the immobilisation of the cornea with a suction ring. A narrow portion of the stroma, either at a superior or nasal position, is left undetached and serves as a hinge for the flap, which is then folded aside. A laser ablation is then performed on the mid-stroma. After the laser ablation the stromal bed is irrigated and the corneal flap repositioned. Recently, flaps have been created with femtosecond lasers, but the acclaimed higher accuracy of this method is still controversial compared to newer mechanical microkeratomes.[(1)]

LASIK results in faster improvement of uncorrected visual acuity, and has significantly less postoperative discomfort than in surface ablation. As there is no epithelial-stromal interaction, except at the flap margin, haze is minimal after LASIK. This enables deeper ablations and thus corrections for higher myopic errors compared to PRK. However, deeper ablation results in a thinner corneal bed, which puts the maintenance of corneal curvature at risk.[(2)] There is a consensus regarding a sufficient stromal bed thickness of 250 μm, but many ophthalmic surgeons prefer a more conservative value of 300 μm so as to avoid keratectasia. Futhermore, the suction ring induces an increase of intraocular pressure to over 100 mmHg, usually for 15 to 45 seconds. Such an elevated IOP poses a potential risk for occlusion in blood flow and thus hypoxemia in the macular region.

Introduction:

Longterm Followup studies after LASIK have shown that this procedure is safe and predictable.[3,4] It seems that over the longterm the results of PRK and LASIK are very similar .

Cornea, as the basic optical lens of the eye, is the main element to be influenced during various, and first of all laser, surgeries with refractive, reconstructive, optical and other purposes.

An unfortunate consequence of corneal refractive surgery is difficulty in accurately calculating intraocular lens (IOL) power in eyes undergoing cataract surgery.[5,6,7]

Cornea, such as thickness changes, regenerative response of corneal tissue and its regulation after (LASIK) results in low inaccurate intraocular pressure (IOP) readings.[8,9]

LASIK induces a shift in corneal polarization axis which is responsible for inaccuracies in RNFL (retinal nerve fibre layer) thickness measurements. A customized compensation for corneal polarimetric changes after LASIK allows normalization of some of the thickness parameters except for the average RNFL thickness around the calculation circle TSNIT (the average RNFL thickness around the calculation circle average) and NFI (it is a global measure based on the entire RNFL thickness map calculating using an advanced form of neural network to discriminate normal from glaucoma patients) .[10]