

**Presbyopic Laser Assisted in Situ
Keratomileusis**

Protocol of essay
Submitted in
Partial fulfillment of master degree
In
Ophthalmology

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Cairo
2007

Introduction

Presbyopia is a Greek word literally meaning old eye. It is a condition of insufficient accommodative amplitude for clear near vision that occurs with ageing. Presbyopia is not a disease as such, but a condition that affects everyone at a certain age. **(Robert Abel, 2004)**

Presbyopia is the only human disorder with a prevalence of 100% during the normal human life span; many spend nearly half their lives with some of presbyopic correction **(Myers R, 1998)**

When the ability to accommodate is lost, it means that the eyes cannot adjust or focus images at different distances. The problem of Presbyopia is usually corrected with glasses or glasses with two focal lengths, one for near and one for distance if the patient already has an error of refraction. **(Johannsottir KR, Stelmach LB 2001)**

Multifocal contact lenses and intraocular lenses have not been very successful, mostly because the overall quality of vision, especially in low light degrades. **(Athiya agrawal, 2005)**

The vision membrane possesses a combination of advantages not found in any existing IOL. These benefits include flexibility, a large optic, the ability to correct both presbyopia and refractive error, and a greater degree of safety of the delicate structures of the anterior chamber. **(Lee T. Nordan 2007)**

In part because patients frequently find spectacles or contact lenses inconvenient, ophthalmologists continue to seek an effective surgical means of correcting presbyopia. The techniques for anterior sclerostomy are still in the early stages of development and we do not yet know the procedure's long-term results and benefits. Incisions into the cornea or sclera may cause healing difficulties, unnecessary weakening, or regression. We also do not know the long-term effects of exposing the uvea. Scleral expansion segments, meanwhile, pose new challenges in surgical technique, and patients may not accept the procedure's cosmetic outcome. These efforts to expand the ciliary space show promise, however, and deserve continued investigation. **(Robert M., Kershner 2002)**

Presbyopia may also be corrected with Monovision that corrects one eye for distance and one eye for near. Monovision can only be used in patients who wear contacts or who have refractive surgery. Thus, the need for glasses with two different focal lengths is resolved by focusing each eye at a different focal length. **(Johannsottir KR, Stelmach LB 2001)**

Presbyopic persons must make a choice. Either both eyes are corrected for distance or one eye is corrected for distance and the other for near. If the patient is unsure of what they would like, contacts can sometimes be used to simulate post-operative results. **(Amar Agarwal 2007)**

Laser Eye Surgery and in particular LASIK surgery is extremely safe, effective and predictable method of correcting myopia, hypermetropia and astigmatism. **(Amar Agarwal 2007)**

Presbyopic LASIK is the final frontier for an ophthalmologist. In the 21st century the latest developments, which are taking place, are in the field of Presbyopia. **(Guillermo Avalos, 2005)**

A multifocal ablation pattern on the cornea is designed as an alternative to dynamic accommodation of the lens. Optical multifocality requires a simpler and less invasive procedure than does recreating dynamic accommodation using foldable IOLs, ciliary sclerotomy, or scleral expansion bands. Unlike multifocal IOLs, multifocal ablations do not attempt to create multiple concentric zones on the cornea for distance, intermediate, and near vision. **(W. Bruce Jackson 2003)**

In Presbyopic LASIK technique the corneal curvature is modified, creating a bilateral multifocal cornea in the treated optical zone. A combination of hyperopic and myopic LASIK is done aiming to create a multifocal cornea. **(Bruce Jackson, 2006)**

This procedure corrects presbyopia by using a predetermined profile to help create an annular presbyopic correction zone in the corneal stroma. That profile is included in the form of programmed software and has different shapes that correspond with the concomitant preoperative defect. As a result, if the patient presents with only presbyopia, the module will be different than it would if he presented with myopia or hyperopia with or without astigmatism in

addition to presbyopia. This means that the profile will not only correct the presbyopia, but also any other existing refractive defect, such as myopia, hyperopia, or astigmatism. Previously, surgeons have corrected each of these conditions separately, which requires more ablation time and is directly related to longer recovery time. **(Luis Antonio Ruiz, MD 2005)**

Monofocal vision with LASIK has also been tried to solve the problem of presbyopia. The goal in such cases is to make the patient anisometric. In this technique, one eye is used for distance vision and the other for near vision. This is obviously not preferred by all persons because loss of stereopsis. **(Samir A. et al 2007)**

Aim of the work

The aim of this essay is to review the development, effectiveness, safety, techniques, indications and the contraindications of the laser assisted in situ keratomileusis for correction of presbyopia.

Contents

- Anatomy of the cornea
- Pathophysiology of presbyopia
- Methods for correction of presbyopia
- LASIK in presbyopia
- Indications and contraindications of presbyopic LASIK
- Techniques of presbyopic LASIK
- Complications of LASIK

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