Advances in Surgical Correction of Presbyopia

Essay
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To My Father

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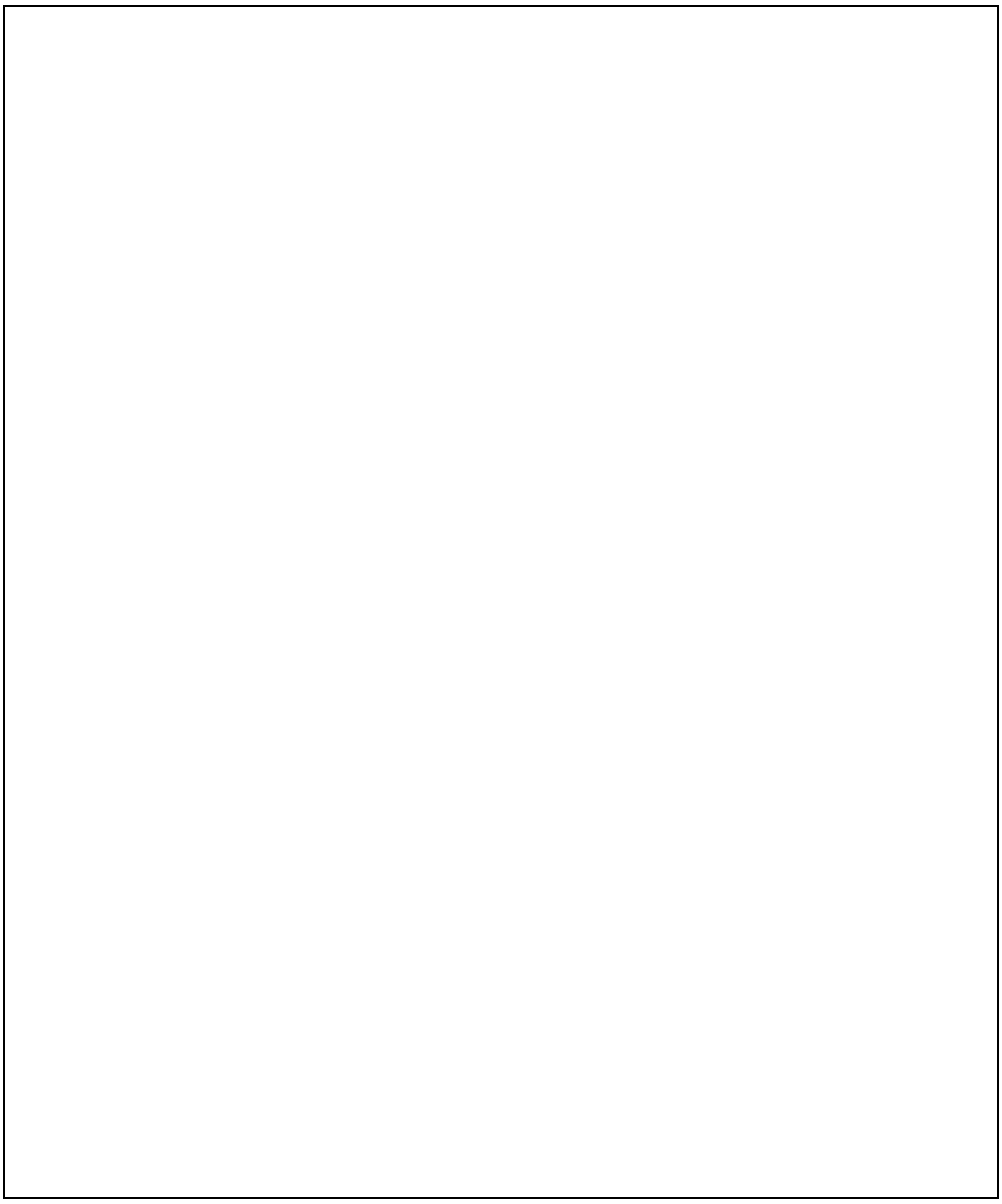

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LIST OF ABBREVIATIONS

ACS: Anterior ciliary sclerotomy

BCVA: Best corrected visual acuity

BSCVA: Best single uncorrected visual acuity

CK: Conductive Keratoplasty

D: Dioptres

IOL: Intraocular lens

LASIK: Laser assisted in situ keratomilueisis

LTK: Laser Thermal Keratoplasty

MRSE: Mean Refractive Spherical Equivalent

NRA: Negative Relative Accommodation

Prelex: Presbyopic Lens Exchamge

PRA: Positive relative accommodation

PRK: Photorefractive Keratectomy

RK: Radial Keratectomy

RTK: Radial Thermokeratoplasty

SEB: Scleral Expansion Band

SEP: Scleral Expansion Plug

UBM: Ultrasound Biomicroscopy

UCVA: Uncorrected Visual Acuity

INTRODUCTION

Presbyopia, derived from the Greek words (*Presbys=aged person)* and *(Opsis=vision),* is a gradual age-related loss of accommodative ability of the eye.

Accommodation is a diopter change in power of the eye to allow near objects to be focused on the retina. Accommodative loss begins early in life. Objective measurements show 2-3 diopters loss per decade, resulting in complete loss of accommodation by 50.8 years.

Many theories were made to explain accommodation, most important were two. *Helmholtz* postulated in 1855 that contraction of the circular ciliary muscle produces relaxation of the zonules, which reduces the tension on the zonules, allows the lens to increase in its convexity. With progression of age, the ability of the lens to do this is lost ***(*Ellis W, 2000*).*** *Schachar,* on the other hand, suggested in 1992 that the longitudinal muscle fibers contract during accommodation, placing more tension on the equatorial zonules, while relaxing the anterior and posterior zonules.Presbyopia occurs when lens diameter reaches a critical size, resting tension on zonules reduced, so when ciliary muscle contracts, insufficient tension is generated on equatorial zonules to affect change in lens power **(Schachar RA, 1992)**.

The conventional non surgical methods for correction of this physiological condition include: spectacles, with their special addition determinants **(Newman, 1998)**, and contact lenses with their variable soft and rigid types**(Mackie, 1993)**.