

Analysis of the Aging-Progression Relationship Patterns of Keratoconic Corneas starting from the Third Decade of Life PROTOCOL STUDY

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Protocol study

INTRODUCTION

Keratoconus is a progressive non-inflammatory corneal disorder which is characterized by irregular apical conical protrusion with corneal stromal thinning characterized by progressive diminution of vision due to myopia and astigmatic components of KC. Many parameters were used to define the progression of KC mainly the anterior and posterior K readings, central corneal thickness at the thinnest location and the back surface elevations. The continuation of the progression of at least 2 of the previous parameters indicates the progression of KC.¹⁻³

Amsler-Krumeich classification is one of the most famous classifications of KC. It graded KC into 4 grades depending on the mean K readings, myopic and astigmatic component of KC and corneal thickness. Grade 1 included mean central K readings < 48 diopters with myopia, induced astigmatism, or both < 5.00 D and corneal thickness > 400 μm . Grade 2 included mean central K readings $\geq 48 - < 54$ diopters with myopia, induced astigmatism, or both from 5.00 to 8.00 D and corneal thickness > 400 μm . Grade 3 included mean central K readings $\geq 54 - < 55$ diopters with myopia, induced astigmatism, or both from 8.00 to 10.00 D and corneal thickness 300 – 400 μm . Grade 4 included mean central K readings ≥ 55 diopters with immeasurable refraction.⁴

Nowadays, it has been settled that corneal collagen cross-linking (CXL) is the only true therapeutic treatment for KC due to its ability to halt the pathological progression of the disease. Furthermore, many authors reported the advantage of epithelium-off CXL in flattening of the keratoconic cornea thus reducing the myopic component of KC and helping in correcting the refractive status of KC hence the idea of both therapeutic and refractive CXL.^{5,6}

Corneal collagen cross-linking (CXL) is the actual and main treatment to keratoconus and has the advantage of halting the progression of the pathology of the disease. The progression of keratoconus can be defined by continues change in 2 or more of special parameters. These special parameters included steepening of the posterior K readings, steepening of the anterior K readings, thinning of the central pachymetry readings and high back surface elevations. 5 Cross-linking PLUS (CXL PLUS) is defined as the simultaneous combination of CXL and a refractive procedure to flatten the cornea and improve vision as ICRS implantation.^{6,8}

Recently, CXL PLUS has become more popular among surgeons as it has the advantages of both halting KC progression and improving the visual outcome. CXL is the main mandatory procedure that stabilizes the cornea and halts the disease progression, hence the name CXL PLUS as plus means adjuvant refractive procedure to improve vision which could be ICRS implantation, topography-guided PRK, Toric Implantable Collamer Lens (TICL), Phakic intraocular lens (IOL) or even refractive lens surgery (clear lens extraction) with Toric IOL implantation. Patient selection for the suitable refractive procedure is essential as not all previously mentioned refractive procedures are suitable for all patients as every keratoconic eye has its suitable refractive procedure. CXL PLUS is the most beneficial modality of treatment as the use of the combination therapy depends on many factors mainly the degree of myopia and astigmatism, the corneal pachymetry and keratometry readings.⁹⁻¹⁴

PURPOSE

To analyze and determine the relationship between age and keratoconus progression after age of 30 years

DESIGN

A prospective clinical study.

PATIENTS AND METHODS

The author will obtain the approval of the ethical committee in faculty of medicine in Sohag University Hospital and informed consent will obtain from all patients.

This study will be conducted on 100 keratoconic eyes after age of 30 years to document KC progression. All eyes will be subjected to pentacam, pachymetry, keratometry, subjective refraction and uncorrected distance visual acuity (UDVA) and corrected distance visual acuity (CDVA). The patients will be divided into 2 groups. Group A will include KC 50 eyes as control group with matching the same age group and subjected to surgery. Group B will include 50 eyes to be treated CXL.

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