

Keratoconus Plus (KC-Plus): A New Term Proposed by an Egyptian Research Team to Treat Keratoconus

In the last two decades, there was a revolution in the operative techniques to treat keratoconus. Among all available procedures nowadays corneal collagen cross-linking (CXL) was the only procedure proved to halt the KC progression. All other procedures beyond CXL were aiming to correct the refractive status of the keratoconic eye. Many new terms emerged in the last decade that made the comparison between different researches' outcomes worldwide had become difficult. This was due to the fact that every research team made its own terminology and abbreviations.

Recently, Randleman JB and colleagues¹ stated the importance to standardize the CXL terminology. They suggested the use of fixed general terms to describe different CXL procedures thus facilitating the comparison of the topographic, refractive and visual outcomes between different researches all over the world. They recommended the following terms: CXL for treatment of corneal ectasias and CXL-Plus for combined therapeutic CXL with another refractive procedure. Furthermore, they recommended the term prophylactic CXL in non-ectatic corneas when CXL is used conjunction with refractive surgery. In addition, the term photo-activated chromophores for keratitis (PACK-CXL) were also settled for treatment of infectious keratitis. Furthermore, they recommended the use of certain abbreviations for CXL protocol nomenclature at they recommended a protocol abbreviation S-CXL for Standard CXL (Dresden protocol) while A-CXL for Accelerated CXL.^{1,2}

The idea of CXL-Plus aimed to achieve two major objects, CXL aiming to halt KC progression and a refractive procedure to correct the myopic and/or astigmatic components of KC. Different procedures were used in conjunction with CXL to perform CXL-Plus. These

procedures were continuous or segmented Intracorneal Ring Segments (ICRS), non-topography guided PRK, wave-front guided PRK (WFG PRK), Phakic Intraocular Lens (Phakic IOLs), Toric Implantable Collamer Lens (TICL). The use of Toric Intraocular Lens (TIOIs) together with Refractive Lens Surgery (RLS) was also used.³⁻⁹

Two years ago, an Egyptian research team, including professors from many Egyptian universities, was created to start a group of new researches regarding management of keratoconus. This Egyptian research team is known as Egyptian Protocol for Keratoconus management group (EPK group). In 2017, they created 3 major scientific conferences mainly for treatment of keratoconus. In our second scientific meeting in Luxor, Egypt in March 2017, a new term was proposed by the EPK group to create a specially designed protocol to treat the medical condition when keratoconus exists with cataract. The group decided to propose the term Keratocnus Plus (KC-Plus) to describe this condition and they decided to follow the Delphi method to define this newly born term according to the known scientific approaches. Now the group had finished the 3 rounds of Delphi method and they decided to do face to face meeting within this year, 2018, to discuss the results of the Delphi method and to vote for the use of this new term in Egypt as an Egyptian consequences to use the term KC-Plus.

Actually, when keratoconic eyes presented with cataract there is a big dilemma regarding many issues. IOL calculation formulas are not 100% accurate in keratoconic eyes. The need to treat the surface corneal irregularities and decrease the high order aberrations before calculation of IOL power in keratoconic cornea is a major demand step to improve the postoperative visual outcomes. The best possible procedures to flatten the corneal surface, eliminate the anterior corneal surface irregularities or even customize the CXL to treat the localized ectatic corneal areas are in question before calculating the IOL power for cataract surgery. Taking into consideration that many young keratoconic patients treated nowadays

will be liable to develop senile cataract after the age of 50 years. This make us wonder if it would be better to think about KC treatment in young age as an important step to correct the anterior corneal surface irregularities and reduce the astigmatic component of KC thus providing a much better chance in the future for accurate IOL calculation needed for cataract surgery if these patients develop cataract one day.

Finally, the Egyptian research team would like to share this new term recommendation with the editor until the final results of the scientific approach of the Delphi method and the outcomes of the face to face meeting announced next summer to be published as an article regarding the Egyptian consequences of this new term KC-Plus.

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