

CÓRNEA

14:50 | 16:30 - Sala Neptuno

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CL112 - 16:00 | 16:10

INTRACORNEAL RING SEGMENTS FOR KERATOCONUS – FACTORS WITH MAJOR IMPACT IN VISUAL FUNCTION AND SATISFACTION

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Introduction

Keratoconus (Kc), the most common primary corneal ectasia, is usually diagnosed in the second decade of life, so it has an extremely long course and seriously affects patients' quality of life (QoL)¹. Intracorneal ring segments (ICRS) are a therapeutic option in cases of contact lens intolerance or low best corrected visual acuity (BCVA) and have been associated with an improvement of visual QoL². However, after ICRS implantation Kc patients may not achieve the visual benefit predicted by the usual clinical parameters³.

Purpose

To correlate the postoperative visual and refractive outcomes of Kc patients implanted with ICRS with self-reported visual QoL and to determine which parameters significantly predict it.

Methods

Cross-sectional study including Kc patients with ICRS implanted with femtosecond laser and no other ocular comorbidities. Besides the standard ophthalmic evaluation and corneal topography with Orbscan IIz system (Bausch & Lomb, USA), patients were submitted to aberrometric wavefront evaluation with OPD-SCAN III (NIDEK, USA) and answered the Portuguese validated Visual Function Questionnaire (VFQ-25). VFQ-25 score was calculated according to authors' guidelines. Correlations between clinical parameters and VFQ-25 were assessed using a generalized linear statistical model (GEE).

Results

Fifty-three consecutive Kc eyes (42 patients) with median follow-up of 12 months were included. After ICRS implantation, there was a significant improvement of BCVA ($p=0.000$), spherical equivalent (SE)($p=0.004$) and topographic parameters ($p\leq 0.009$). The mean postoperative corneal coma was $2.50\pm 1.06\mu\text{m}$ and mean higher order corneal aberrations were $3.51\pm 1.29\mu\text{m}$. Multivariate GEE analysis revealed that VFQ-25 total score was statistically significantly correlated with gender (men more satisfied, $p=0.000$), binocular BCVA ($p=0.027$), SE ($p=0.000$) and corneal coma ($p=0.000$). Refractive cylinder was not correlated with better total scores. In the model including higher order aberrations, similar results were found.

Conclusion

Postoperative self-report satisfaction after ICRS implantation in Kc is better in men with low SE and better BCVA. Corneal aberrations, namely coma, seem to be significant predictors of visual QoL, even after adjusting for other parameters. ICRS implantation normograms should consider them in order to improve patients' daily visual satisfaction.

References:

1. Kymes SM, Walline JJ, Zadnik K, Sterling J, Gordon MO. Changes in the quality-of-life of people with keratoconus. AJO. 2008.
2. De Freitas Santos Paranhos J, Avila MP, Paranhos A, Schor P. Visual perception changes and optical stability after intracorneal ring segment implantation: comparison between 3 months and 1 year after surgery. Clin ophthalmol. 2011
3. Paranhos J de FS, Paranhos Jr A, Avila MP, Schor P. Analysis of the correlation between ophthalmic examination and quality of life outcomes following intracorneal ring segment implantation for keratoconus. ABO. 2013.