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Aberrometric outcomes of intrastromal corneal ring segment (KeraRing 355) in patients with keratoconus

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Objective: To evaluate aberrometric changes in corneas with keratoconus implanted with intrastromal corneal ring segment (Keraring 355) during a 3-months follow-up.

Design: Prospective, consecutive case series

Methods: In this interventional study, 22 eyes of 21 keratoconic patients with mean age of 29 ± 6 years who underwent KeraRing 355 intrastromal corneal insertion using a PocketMaker Microkeratome for channel creation and completed at least three months of follow-up were included. Uncorrected visual acuity (UCVA), best corrected visual acuity (BCVA), Contrast Sensivity, refractive outcome, Orbscan finding and corneal aberrations were assessed.

Results: Three months postoperatively, The mean UCVA (in LogMAR value) improved significantly from 0.75 ± 0.33 to 0.31 ± 0.23 and the mean BCVA improved (from 0.31 ± 0.16 to 0.19 ± 0.15). The mean spherical refractive error improved (from -1.37 ± 1.36 to 0.01 ± 2.47) and the mean cylindrical refractive error decreased significantly (from -3.8 ± 1.03 to -2.1 ± 1.27). Also, the mean keratometry value decreased from 47.63 ± 1.9 to 42.06 ± 2.47 . In regard to aberrometry, Low order aberration (defocus and astigmatism) decreased significantly postoperatively. No statistically significant changes were detected in total RMS, trefoil, secondary trefoil and coma. A statistically significant increase in quatrefoil, secondary coma, spherical aberration and secondary spherical was found.

Conclusion: KeraRing 355 implantation provided significant improvement in UCVA, spherical and cylindrical refractive error, keratometry results and low order aberrations but it was not effective in HOA.

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