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The effects of implantable collamer lens implantation on higher order aberrations

By

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Abstract

AIM: To evaluate the changes in higher order aberrations (HOAs) after implantable collamer lens (ICL; Staar Surgical, Nidau, Switzerland) implantation.

METHODS: Totally 30 eyes of 18 patients with myopia were included in this study with an average age of 25.77y (min: 21, max: 40). Refraction, uncorrected distance visual acuity (UDVA), corrected distance visual acuity (CDVA), HOAs (entire, corneal and internal) were evaluated preoperatively and three months postoperatively. Ocular aberrations were measured by using iTrace (Tracey Technology, Houston, Texas, USA). SPSS (IBM Corp. Released 2013. IBM SPSS Statistics for Windows, Version 22.0. Armonk, NY: IBM Corp) was used for the statistical analysis and the interpretation of the data. P values of less than 0.05 were considered statistically significant.

RESULTS: The preoperative mean spherical power was -9.01 D (min: -5.00, max: -13.00) and the mean cylindrical error was -2.40 D (min: -0.50, max: -4.75). The postoperative mean residual spherical power was -0.73 D (min: -0.20, max: -1.75) and the mean cylindrical error was -0.89 D (min: -0.18, max: -2.09). Analyses were made on root mean square (RMS) values of total HOAs (tHOAs), spherical aberration, coma and trefoil as entire, corneal and internal components. The differences in entire tHOAs and in internal tHOAs were significant. There was no significant change found in spherical aberrations. The differences in entire coma and in internal coma were significant. There was no significant change found in corneal coma. With respect to trefoil, the only significant difference was in internal trefoil.

CONCLUSION: The ICL implantation corrects the refractive error successfully and changes entire and internal HOAs of the eye.

Keywords

Author Keywords: implantable collamer lens; myopia; aberrations

Keywords Plus: OPTICAL-QUALITY; REFRACTIVE ERROR; MYOPIA; EYES; SYMPTOMS; MODERATE; LASIK

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