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CME Session

Presentation Abstract

Program#/Poster#: 5696/D635

Abstract Title: **Optimum Optical Outcomes In Cataract Post-lasik Patients With Light Adjustable Intraocular Lenses**

Presentation Start/End Time: Thursday, May 05, 2011, 8:30 AM -10:15 AM

Session Number: 522

Session Title: Cataract Surgery II

Location: Hall B/C

Reviewing Code: 140 cataract surgery - LE

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Keywords: 445 cataract; 680 refractive surgery: LASIK; 681 refractive surgery: optical quality

Abstract Body: **Purpose:** Post-LASIK cataract patients are more likely to have significant refractive errors after cataract surgery. In addition, they present more aberrations after standard intraocular lens implantation due to their higher values of corneal spherical aberration. We have developed a procedure to optimize the final optical quality outcomes in myopic post-LASIK patients implanted with light adjustable intraocular lenses (LALs).

Methods: Four cataract patients that had underwent previous myopic LASIK were implanted with LALs (Calhoun Vision, Pasadena, USA). Two weeks after surgery, the implanted lenses were irradiated with appropriate spatial intensity profiles to correct the patients' refractive errors (defocus and astigmatism). The patients received a second aspheric light adjustment to induce controlled amounts of negative spherical aberration to compensate for the elevated positive corneal spherical aberration. After the two adjustment procedures, two additional photo-locking treatments were performed to ensure that the LAL was fixed. Wavefront-guided refraction and spherical aberration measurements were determined for every patient during the entire adjustment process. Uncorrected distance Visual acuity (VA) was measured using a computer-assisted procedure.

Results: Initial refraction after the surgery was within the range of

the LALs adjustability (2 D defocus and 2 D of astigmatism). The average pre-adjustment value of eye's spherical aberration was 0.25 microns for a 4-mm pupil diameter. The first light treatment was set to render the eyes slightly hyperopic (0.5 D). The second aspheric treatment induced negative spherical aberration in the LAL to compensate for the pre-existing corneal aberration together with a myopic shift. The final measured refraction was in average mildly myopic (-0.5D) and the spherical aberration was around zero (SD = 0.04 microns). Uncorrected distance VA was on average 1. In one particular case, where both refraction and spherical aberration was near to zero, uncorrected distance VA peaked at 1.4.

Conclusions: We have successfully used the LAL to optimize the refractive and aberration outcomes in post-LASIK cataract patients. This type of adjustable technology is especially well suited for these type of patients who may present large refractive surprises and have large corneal aberrations induced by the previous LASIK procedures.

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