Comparison Wave front Aberrations after Cataract Surgery in Patients Implanted with Two Spherical and Aspherical Intraocular Lenses

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Abstract:

**Background and Objectives:** It has been claimed that aspherical intraocular lenses can optimize image quality by limiting rays diffraction. This study aimed at comparing the wave front aberrations after cataract surgery with 2 foldable intraocular lenses; spherical Akreos Fit and aspherical Akreos Adopt AO.

**Materials and Methods:** during a 12 month period we conducted a clinical trial study an evaluated wave front aberration in 3 group (20 eyes in each groups). aspheric (AO) and spherical (Akreos fit) intraocular lenses implanted in groups 1 and 2 respectively. Group 3 consist of 20 phakic age matched eyes. One month after cataract surgery, the aberrations were measured in each group. Individual Zernike polynomials and the root-mean-square (RMS) 2nd, 3rd and 4th order aberrations, high-order aberrations and the total RMS value were compared between the 3 groups.

**Results:** The total and the high-order aberrations, as well as the spherical aberration were statistically significantly lower in the aspheric intraocular lens group comparing with the spheric intraocular lens and control groups. The 2nd and 4th order aberrations were also lower in the aspheric lens group comparing with the spheric lens group, but comparable with results in the control group. Our study showed some of aberration that exists after cataract surgery in intraocular akreos adopt ao lens are lower than intraocular akreos fit lenses.

**Conclusion:** This study revealed that aberrations is lower and quality of vision is better in aspheric (AO) than spheric intraocular lenses.

**Keywords:** Cataract, Intraocular Lens, Wave front aberration.

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