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# EFFECT OF DECENTRATION ON THE QUALITY OF VISION: A COMPARISON BETWEEN ASPHERIC BALANCE CURVE DESIGN AND POSTERIOR ASPHERIC DESIGN INTRAOCULAR LENSES

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## Abstract

**Purpose:** To study the effect of decentration on the quality of vision in two aspheric intraocular lenses (IOLs): aspheric balance curve(ABC) design Vivinex iSert XY1(Hoya Surgical Opticals, Inc.) and posterior aspheric design AcrySof IQ SN60WF (Alcon Laboratories, Inc.).

**Setting:** Advanced Eye Centre, PGIMER, Chandigarh, India.

**Design:** Randomised Prospective Trial using Random number table.

**Methods:** Eighty-five eyes were randomized to Group 1 (Vivinex XY1) and Group 2 (Acrysof IQ) with 40 and 45 eyes respectively. The HOA profile, Strehl's ratio, decentration of IOL from the visual axis (DVA) and the geometric axis (DGA), angle Alpha and Kappa were recorded on the iTrace aberrometer and contrast sensitivity was measured using the Functional Acuity Contrast Test at 12 weeks post-surgery.

**Results:** The mean values of the Strehl's ratio ( $p=0.48$ ) and the HOA's ( $p=0.12$ ) of both IOLs were comparable. The HOA's gradually increased with increasing DVA for both lenses at 3, 4 and 5mm pupil sizes. On comparing the HOA's with the DGA a statistically insignificant positive correlation was observed. The Strehl's ratio did not deteriorate with increasing angle alpha in the Vivinex XY1 group, however worsened in the Acrysof IQ group. The contrast sensitivity was comparable in both the IOLs except at 1.5cpd under photopic conditions where Acrysof IQ was better.

**Conclusions:** Decentration of the lens is best measured with respect to the visual axis. In eyes with a large alpha, the ABC design induced lesser HOA's and maintained a better Strehl's ratio.

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