

VISUAL ACUITY ASSESSMENT WITH A DYOP® VERSUS A SNELLEN ACUITY CHART FOR PRE AND POST CATARACT SURGERY

Dr. Peter Gordon, MD, Kimberly Brewer, COA
Eye Physicians and Surgeons, Decatur, Georgia

ABSTRACT

Purpose: To compare the visual acuity of pre and post cataract surgery's patients using a Snellen acuity chart and a Dyop acuity chart as to differences in resolution acuity versus recognition acuity.

Methods: Fifty-nine patients (105 eyes) with senile cataracts aged 40 years or older, and with no other ocular pathologies, were evaluated as to visual acuity for pre and post cataract surgery using the Snellen acuity and Dyop acuity charts.

Results: Cataracts were nuclear in 50 eyes, nuclear and posterior sub capsular in 24 eyes, nuclear and cortical in 23 eyes, nuclear, cortical and posterior sub capsular in 4 eyes as well as nuclear, anterior and posterior sub cortical in 2 eyes, pre cataract surgery. The average spherical equivalents pre cataract surgery refractive assessments for the patients were $-0.61 \pm 2.81D$ and $-0.63 \pm 3.22D$ for right and left eye respectively. The mean VA measured at pre cataract surgery were significantly overestimated with Snellen (OD: 0.64 ± 0.15 , OS: 0.69 ± 0.23 decimal units) versus Dyop (OD: 0.53 ± 0.25 , OS: 0.55 ± 0.24 decimal units), for both eyes (OD: $p = 0.01$, OS: $p = 0.01$). The mean VA measured at post cataract surgery were also significantly overestimated with Snellen (OD: 0.88 ± 0.22 , OS: 0.85 ± 0.20 decimal units) versus Dyop (OD: 0.72 ± 0.22 , OS: 0.72 ± 0.23 decimal units), for both eyes (OD: $p = 0.00$, OS: $p = 0.01$). The Bland Altman plots of difference in the means for assessment of visual acuity with the two charts against the average means for assessment of visual acuity with the two charts for both eyes, were not within clinically acceptable levels, pre and post cataract surgery.

Conclusions: Visual acuity measurements for pre and post cataract surgery were different with a Snellen acuity chart and a Dyop acuity chart in that the Dyop test was a more precise indicator of acuity resolution. These two charts cannot be used interchangeably. The apparent strength of the Dyop acuity assessment is that it primarily utilizes resolution acuity, thus preventing overestimation of visual acuity which is inherent in the recognition acuity of the Snellen test.

Keywords: Visual Acuity; Visual acuity charts; Age-Related Cataract; Cataract Surgery