Randomized Controlled Trial of IOL Orientation for Dysphotopsia

Mitul Vakharia, MD

Abstract

The purpose of this research study was to evaluate whether positioning a monofocal intraocular lens (IOL) in different orientations during cataract surgery would decrease the incidence and/or severity of positive and negative dysphotopsia. This was a prospective, randomized case study that took place at New Vision Laser Center, Rockford, IL and Rockford Ambulatory Surgery Center, Rockford, IL in association with the University of Illinois College of Medicine at Rockford. All patients underwent cataract surgery in both eyes with implantation of a 1-piece acrylic monofocal IOL by a single surgeon. They were randomly assigned to have one optic-haptic junction positioned either vertically, horizontally, superonasally or inferonasally. After surgery all patients were suveyed about positive or negative dysphotopsia symptoms postoperatively at 1 week after each eye surgery and then again 4 to 6 weeks after their surgeries. This data was analyzed using the Cochran-Mantel-Haenszel test and Kruskal-Wallis test to compare the differences of dysphotopsia incidence and severity between the four groups. The study comprised 163 patients (326 eyes). The IOL was oriented vertically in 82 eyes, horizontally in 72 eyes, superonasally in 94 eyes and inferonasally in 78 eyes. The difference in incidence and severity for positive dysphotopsia was not statistically significant at 1 week or 4-6 weeks after surgery. There was a significant difference between orientations in incidence for negative dysphotopsia at 1 week after surgery ($P = 0.0191$). A similar proportion of patients in the vertical, and horizontal and inferonasal groups reported negative dysphotopsia symptoms (~20%), while a significantly larger percentage of patients in the superonasal group experienced symptoms (45%). There was also a significant difference found for the incidence of negative dysphotopsia at 4-6 weeks postoperatively ($P = 0.0015$). Patients in the superonasal group again had the worst outcome, with 47% reporting symptoms at 4-6 weeks. There was a trend toward the horizontal group having the best outcome with only 6% reporting symptoms at 4-6 weeks. Additionally, severity of negative dysphotopsia symptoms 4-6 weeks postoperatively was also significantly different ($P = 0.0036$), with the superonasal group reporting the most severe symptoms and the horizontal group reporting the least. In conclusion, the orientation of the optic-haptic junction of an acrylic monofocal IOL was significantly associated with incidence of negative dysphotopsia both 1 week and 4-6 weeks after surgery with the superonasal orientation having the worst outcomes, and a trend toward the horizontal orientation having the best outcomes.