

Pearls for Success With Presbyopia-Correcting IOLs

The authors provide their pre-, intra-, and postoperative tips and tricks for improved outcomes.

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In 2005, US ophthalmologists anxiously awaited the release of the latest generation of multifocal IOLs to treat patients with presbyopia. Some surgeons achieved excellent results, whereas others did not. The varying levels of success are intriguing. In our practice, eight surgeons perform cataract surgery. For the first 6 months of 2007, four of the surgeons implanted presbyopia-correcting IOLs in 25% or more of their patients (range, 25% to 37%). In contrast, three other surgeons used presbyopia-correcting lenses in less than 7% (range, 0 to 7%) of their patients. We believe that the aforementioned differences in the level of success can be traced to pre-, intra-, and postoperative management and the setting of realistic postoperative expectations.

PREOPERATIVE PREPARATION AND TESTING Education

Patients must understand that although current presbyopia-correcting lenses provide an unprecedented range of vision, they are not perfect. Informing patients that they may require glasses in specific situations is important, because surgeons cannot guarantee that patients will be 100% spectacle free after receiving a presbyopia-correcting IOL. Furthermore, patients should know that their reading vision in dim illumination may be less than satisfactory.

Besides these functional issues, patients should also understand that each type of presbyopia-correcting IOL would have different issues that patients need to be made aware of. For example, multifocal IOLs are more often associated with glare, flare, halos, and ghosting than monofocal or accommodating lenses.

Image Quality

Succeeding with multifocal IOLs entails understanding how they work. Essentially, these lenses provide

multifocality by splitting light rays into near and distance foci. This diversion of some light rays maximizes the importance of ensuring that the rest of the visual pathway helps provide a high-quality image. Any compromises in image quality on the retina (defocus or opacity) will degrade the quality of vision. Deterioration of the visual processing system (eg, due to irregular corneal astigmatism, macular dysfunction, or optic nerve disease) will compound the reduction of contrast sensitivity from the multifocal optics. Patients with any significant compromise to macular or optic nerve function may be poor candidates for these IOLs.

Corneal Topography

Corneal topography can detect irregular astigmatism, frank and forme fruste keratoconus, and early and frank pellucid marginal degeneration. Because these patients' irregularly shaped corneas will reduce their BCVA, they are less than ideal candidates for presbyopia-correcting IOLs.

Recognizing Macular Dysfunction

Macular dysfunction, whether pre-existing or induced by intraocular surgery, can be a common reason for patient dissatisfaction following the implantation of a presbyopia-correcting IOL. Although some types of macular pathology are visible upon preoperative examination, a number of conditions are subtle and difficult to visualize in the presence of a visually significant cataract. Optical coherence tomography (OCT) of the macula, however, can help identify epiretinal membranes, vitreomacular traction syndrome, and early macular holes. Affected patients need to be educated about their preoperative condition and how it may affect their vision postoperatively.

INTRA- AND POSTOPERATIVE CONSIDERATIONS

Refractive Errors

Residual refractive errors (sphere and cylinder) are among the most obvious contributors to patients' dissatisfaction. Surgeon-specific A-constants, careful measurements of preoperative axial length and the breadth of corneal power, and accurate IOL calculations are critical. Astigmatism significantly degrades visual image quality, especially with multifocal IOLs, which can lead to complaints of poor quality of vision. For this reason, it is important to treat preexisting astigmatism of 0.75 D or more. Performing limbal relaxing incisions (LRIs) at the time of surgery can safely and effectively help these patients. For a large degree of preoperative astigmatism or residual refractive error postoperatively despite the placement of LRIs, surgeons should consider laser vision correction, conductive keratoplasty, or a piggyback IOL.

Cystoid Macular Edema

Small reductions in visual quality are magnified in patients with presbyopia-correcting IOLs, and cystoid macular edema (CME) is one of the most common and visually important causes. Surgeons should make every effort to reduce the risk of macular swelling, which jeopardizes patients' quick and full visual recovery from IOL surgery. A meticulous surgical technique will help to avoid trauma to the iris and capsular rupture, thus minimizing inflammation. Even a technically perfect surgery will liberate prostaglandins, which can induce macular thickening and CME.

NSAIDs

Many cataract surgeons routinely use steroids but not topical NSAIDs. A recent clinical study supports the synergistic effect of ketorolac 0.4% with prednisolone acetate 1% following cataract procedures.¹ In this large multicenter trial of healthy patients with healthy maculas, there was a statistically significant reduction in CME in cataract surgery patients treated with the combination of prednisolone acetate 1% and ketorolac 0.4% versus prednisolone acetate 1% only. The combination group also achieved better contrast sensitivity, particularly important with multifocal IOLs, which—as mentioned—reduce contrast sensitivity.

Dry Eye

Patients who report fluctuating vision may have dry eyes. An examination of their eyelids and ocular surface can reveal signs of dry eye, which can be worse following cataract surgery. The condition is exacerbated by

LRIs, which can sever corneal nerves. The options for treatment include anti-inflammatory drops (topical cyclosporine and/or short-term use of a low-dose topical steroid), punctal plugs, and artificial tears.

Follow-Up

Inevitably, some patients will be disappointed with their visual results. In these cases, it is critical to repeat OCT to ensure that their maculas have remained healthy. A careful re-examination of the posterior capsule is also indicated, because mild posterior capsular opacification (which would not affect the vision of a monofocal patient) can reduce these individuals' contrast sensitivity and quality of vision. A YAG capsulotomy can improve their visual acuity and satisfaction.

CONCLUSION

The proper selection and counseling of patients are important to the success of presbyopia-correcting IOLs. Preoperative testing (corneal topography and OCT) will help to ensure that patients' eyes are healthy. The use of pre- and postoperative topical NSAIDs in conjunction with prednisolone acetate 1% can help optimize their quality of vision postoperatively. When patients are dissatisfied postoperatively, it is important to conduct careful evaluations for early posterior capsular opacification and dry eye, because the treatment of these conditions can help improve their visual results. ■

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1. Wittpenn J, Silverstein S, Hunkeler J, et al. A masked comparison of Acular LS plus steroid versus steroid alone for the prevention of macular leakage in cataract patients. Presented at: The AAO Annual Meeting; November 12, 2006; Las Vegas, NV.