

Mixing IOLs: What Are the Options?

Surgeons may select from five approaches to achieve the best possible results in each patient.

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The ideal IOL would provide perfect vision and seamless accommodation from distance to near without aberrations, a loss of contrast sensitivity, dysphotopsia, posterior capsular opacification, or a loss of function with time. Because every currently available lens has benefits and disadvantages, combining different IOLs in a single patient may enhance his outcome by maximizing his vision while reducing unwanted side effects.

At present, there are three main categories of IOLs: monofocal (spherical, aspheric, and toric); accommodating; and multifocal. This article focuses on the five basic possible combinations.

COMBINATION No. 1

One option is to combine two monofocal IOLs with different focal points to achieve monovision. This approach can be very successful, particularly in patients who have worn such a correction in contact lenses. Surgeons can choose the exact focal point of the near eye to suit the patient's needs. Targeting myopia of 1.00 to 1.75 D allows for functional intermediate vision, whereas a target of 2.00 to 2.50 D provides true near vision.

The monovision approach requires neuroadaptation, with suppression of the near eye when the subject gazes at distant objects and suppression of the distance eye when he focuses up close. The greater the disparity is between his eyes, the more difficult it is for the patient

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to neuroadapt. Nevertheless, there is the benefit of maintaining a high quality of vision with monofocal optics. Pseudophakic monovision is a good option in patients who are at risk of developing eye diseases that will impact their contrast sensitivity (eg, glaucoma, macular degeneration, diabetic retinopathy). It is also appropriate for patients who have undergone keratorefractive surgery (eg, excimer laser ablation, incisional keratotomy), because corneal irregularities may already impact their contrast acuity and visual quality.

COMBINATION No. 2

Another alternative is to mix a monofocal with an accommodating IOL. Patients should attain excellent distance and intermediate vision and fairly good near vision (J3). Targeting some myopia in the eye with the accommodating IOL can achieve a stronger near point, albeit with some sacrifice of distance acuity in that eye. This combination of IOLs may be particularly useful when the patient has undergone prior IOL surgery in one eye, which has a monofocal lens, and desires enhanced near

vision in his second eye without sacrificing visual quality. The approach maintains a high quality of vision with monofocal optics. Like the previous combination, this option is appropriate for patients at risk for eye diseases and for those who have previously undergone corneal refractive surgery.

COMBINATION No. 3

Combining a monofocal with a multifocal IOL allows both of the patient's eyes to achieve excellent distance vision with the added benefit of some pseudoaccommodation in his multifocal eye. The ReZoom multifocal IOL (Advanced Medical Optics, Inc., Santa Ana, CA) provides excellent intermediate vision and good near vision, whereas the AcrySof Restor IOL (Alcon Laboratories, Inc., Fort Worth, TX) provides excellent near vision but minimal intermediate vision. With any multifocal IOL, patients may experience glare, halos, and reduced contrast acuity. Most find that these symptoms diminish with time. When unwanted visual phenomena do occur, their presence in only one eye may have a mitigating effect.

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COMBINATION No. 4

Surgeons may mix an accommodating with a multifocal IOL. This combination produces a quality of vision similar to mixing a monofocal and a multifocal lens, but patients' intermediate vision should be superior. An accommodating IOL can be an appropriate choice for the second eye of patients who achieved good unaided visual acuity with a multifocal lens in their first eye but are struggling with glare and halos.

COMBINATION No. 5

Lastly, one can mix two multifocal IOLs of differing types. Many surgeons find this combination useful when a patient seems to be comfortable with and adaptable to multifocal optics but has a strong desire to improve both his uncorrected intermediate and near vision. Mixing a ReZoom and an AcrySof Restor IOL can achieve this result.

TIPS FOR SUCCESS

With any of the combinations described, it is imperative to treat preexisting conditions that may impair the

patient's vision. For example, ophthalmologists should treat or manage malpositioned eyelids, blepharitis, dry eye, and anterior basement dystrophy before surgery. As always, counseling patients preoperatively is critical. The surgeon should understand the patient's needs and preferences. Additionally, the patient should understand the limitations of each combination and its potential compromises and side effects. He should be informed of the potential need for enhancement surgeries and the associated costs and risks.

Intraoperatively, surgeons must pay special attention to the centration and positioning of the IOL, particularly with toric, accommodating, and multifocal designs. Improper positioning may not only reduce these lenses' effectiveness, but it may also impair the patient's visual outcome. Reducing the incidence of posterior capsular opacification and capsular phimosis (for instance, through adequate capsulorhexis size, symmetric capsular shape, meticulous cortical cleanup, and capsule/optic overlap) is also important. In addition, having patients use NSAID drops for several weeks postoperatively may prevent cystoid macular edema, which even in subtle forms can impair contrast acuity. A plan to treat corneal astigmatism of 0.75 D or greater is often required. If a toric IOL is not used, then the surgeon should consider incisional keratotomies, laser excimer ablation, or conductive keratoplasty.

CONCLUSION

Mixing IOLs is a known and a successful strategy for many patients. The authors have achieved excellent outcomes with all of the combinations described in this article. The choice of which IOLs to implant depends upon the patient's lifestyle, preference, and personality. Until the perfect IOL is developed, mixing lens designs will remain a useful strategy for correcting patients' vision. ■

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