To Mix or to Match

When should surgeons combine the Crystalens and Acrysof Restor IOLs?

BY JOHN F. DOANE, MD

To mix or to match is not quite as poetic a question as Hamlet's "To be or not to be," but it is one that has been debated frequently by surgeons who implant presbyopia-correcting IOLs. Ophthalmologists in other countries have been mixing different multifocal IOLs in their patients' eyes for the past 4 to 5 years, but physicians and patients in the US have become interested in this strategy for vision correction only since the introduction of the Acrysof Restor (Alcon Laboratories, Inc., Fort Worth, TX) and Rezoom (Advanced Medical Optics, Inc., Santa Ana, CA) multifocal IOLs over the past 18 to 24 months. I believe that mixing the Crystalens accommodating IOL (Eyeonics, Inc., Aliso Viejo, CA) with a multifocal IOL can optimize the strengths of each lens type and can improve certain presbyopic patients' vision at all focal ranges.

ASSESSING FUNCTIONAL STRENGTHS

To understand how the Acrysof Restor IOL and the Crystalens complement each other, it helps to list the technical strengths and weaknesses of the lenses' different designs.

The Acrysof Restor lens' multifocal design does not include an add for intermediate focal ranges, but it provides good distance and near vision. One study found that 97.5% and 66.9% of patients who received this lens obtained uncorrected near visual acuities of 20/40 and 20/25 or better at 33 cm, respectively.[1] In another study, 40% percent of patients achieved 20/20 near vision with the Acrysof Restor IOL versus only 3.2% of the patients who received a monofocal lens.[2]

The same features of the Acrysof Restor that enhance distance and near vision, however, contribute to the IOL's lack of definition at intermediate focal points and the potential for decreased contrast sensitivity.

> "Mixing an accommodating and a multifocal IOL can optimize the strengths of each lens type and improve certain patients' vision at all focal ranges."

In contrast, the Crystalens provides excellent distance and intermediate vision and minimizes visual problems in scotopic conditions.

The most comprehensive data on the Crystalens come from its FDA clinical trials.[3] At 1 year postoperatively, 100% of 53 patients had binocular UCVAs of 20/40 or 20/32, and 96.2% saw 20/25 or better in the distant and intermediate focal ranges. Most patients (98%) saw 20/40 at near, but fewer achieved near visual acuities of 20/32 (89%) and 20/25 (74%).

The perceived weakness of the Crystalens at present is the variability of near function it will provide for a given eye, which may make it difficult to predict which patients will achieve optimal unaided near vision.

Technically, the Acrysof Restor IOL and the Crystalens appear to be complementary, but this combination may not be appropriate for every patient. What type of patient, then, can benefit from mixing these presbyopia-correcting IOLs?

MATCHING GOALS AND IOLs

In my experience, good candidates for mixed IOLs have a strong desire to achieve excellent distance, intermediate, and near vision after cataract surgery without wearing reading glasses. We surgeons can potentially provide this result by mixing presbyopia-correcting IOLs, but patients must understand that multifocal

implants can cause dysphotopsias. We must also warn them that we cannot guarantee they will have total freedom from spectacles.

If I were treating a presbyopic patient who did very little near work, frequently used a computer (intermediate distance), and needed high-quality vision for night driving and other low-light conditions, I would implant a Crystalens in both of his eyes. A certain percentage of patients with similar needs who received Acrysof Restor IOLs bilaterally would probably be unhappy with their unaided distance vision and also might experience unwanted visual problems due to the diffractive IOL's effects on contrast sensitivity.

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Implanting a Crystalens in one eye and an Acrysof Restor IOL in the other could give this patient good vision at all focal distances. Both lenses would contribute to his distance vision, the Crystalens would function at intermediate distances, and both lenses would contribute to near vision. At first, the Acrysof Restor would be responsible for most of the patient's near vision, but I have observed that the Crystalens' near function continues to improve for as long as 2 years postoperatively. Therefore, the patient should be advised that the near vision that the Crystalens provides should improve with time and that he should avoid using reading glasses while working on a computer or performing other proximal intermediate activities until this occurs.

In my experience, most patients adapt quickly to their mixed IOLs and rarely compare one eye with the other. To date, I have treated approximately 100 patients with the Acrysof Restor/Crystalens combination without explanting a single lens.

CHOOSING A STRATEGY

After deciding that a patient can benefit from mixed IOLs, the surgeon needs to determine which lens to place in which eye. As is the goal with all presbyopia-correcting IOLs, the targeted refraction should be close to emmetropia without residual astigmatism.

One straightforward approach is to implant a Crystalens in the patient's dominant eye and an Acrysof Restor IOL in his fellow (nondominant) eye. In my clinical experience, this method usually achieves a good result and allows patients to see at distance, intermediate, and near when they look through both unoccluded eyes.

A second approach is to implant one type of IOL during the first cataract surgery and evaluate the results before deciding which IOL would work best in the patient's other eye. For example, I would probably implant a second Crystalens in the fellow eye of a patient who sees very well at distance, intermediate, and near with a Crystalens after his first cataract surgery. If he decided he needed more reading vision than was provided by the Crystalens, I would consider implanting an Acrysof Restor lens in his second eye.

This strategy also works for patients who receive an Acrysof Restor IOL first. If a patient is satisfied with the full range of vision with this lens, one could implant another Acrysof Restor lens in his second eye. Alternatively, one could augment his intermediate vision by implanting a Crystalens in his contralateral eye if desired.

CONCLUSION

When asked whether it is better to mix or to match presbyopia-correcting IOLs, most surgeons would agree there is no clear-cut answer. Likewise, I think practitioners who work with these special lenses would say that it takes a certain degree of "art" on their part to select the IOLs that meet a specific patient's daily visual needs. In some cases, mixing accommodative and multifocal IOLs may help surgeons achieve success with presbyopia-correcting IOLs. Past experience and an understanding of the advantages offered by different IOLs' designs can facilitate the decision of whether it is better to mix or to match in a given case. ■

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