

# An Argument Against Mixing Presbyopia-Correcting IOLs

The bilateral implantation of the Acrysof Restor lens achieves solid results.

BY CON MOSHEGOV, FRANZCO

Until the recent availability of two new multifocal and one accommodating IOL, the Array lens (Advanced Medical Optics, Inc., Santa Ana, CA) was the most popular multifocal IOL. Unfortunately, many patients complained of unwanted visual phenomena such as glare and halos at night. Moreover, the Array lens is dependent on pupillary size, and patients with small pupils have difficulty using the IOL for near work. Array patients' degree of freedom from reading glasses is highly variable.<sup>1</sup>

The Rezoom (Advanced Medical Optics, Inc.) and Acrysof Restor (Alcon Laboratories, Inc., Fort Worth, TX) IOLs represent advances in multifocal IOL technology. Along with the Crystalens accommodating IOL (Eyeonics, Inc., Aliso Viejo, CA), these lenses are options for correcting presbyopia in cataract and refractive surgery patients. The near and distance refractive zones have been altered in the Rezoom IOL from the design of the Array lens. To reduce the incidence and severity of unwanted visual phenomena, the manufacturer enlarged the central, distance-weighted zone and moved the second, near-weighted zone more peripherally.

I prefer the Acrysof Restor lens, because I have found that its diffractive optics virtually guarantee good near acuity as long as the refractive outcome (particularly the astigmatic component) is close to emmetropia. Troublesome glare and halos have been uncommon among my patients. According to the FDA data, the rate of halos was 7.2% severe and 23.2% moderate, and the rate of glare or flare

was 4.3% severe and 23.2% moderate.<sup>2</sup> Moreover, the lens is built on the successful Acrysof platform.

Rather than select a single presbyopia-correcting IOL for a given patient, many of my colleagues are now mixing and matching lenses. The idea was not new, and it initially seemed a reasonable strategy to me. My experience, however, has led me to advocate the bilateral implantation of the Acrysof Restor lens.

## MY EXPERIENCE WITH THE ACRYSOF RESTOR LENS

The Acrysof Restor lens has a central 3.6-mm diffractive region, and the diffractive step heights fall from the center to the periphery (from 1.3 to 0.2  $\mu\text{m}$ ). This pattern is called *apodization*. Interim data from the FDA about the IOL indi-

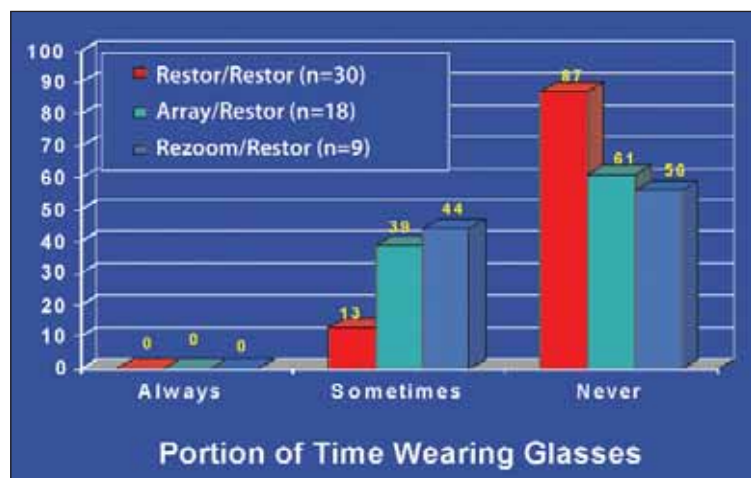


Figure 1. This graph shows the degree of spectacle independence among Dr. Moshegov's patients 6 to 9 months after surgery on their second eyes.

cated that the lens provided excellent near visual acuity without compromising distance visual acuity, that no significant reduction in contrast sensitivity occurred, and that subjects easily tolerated visual disturbances.<sup>2</sup>

I have implanted the Acrysof Restor lens in more than 300 eyes, and my results have easily matched and even surpassed the FDA data. Distance visual outcomes with the IOL have been comparable to monofocal lenses. My patients' near vision is outstanding, with 95% seeing J4 almost on the first postoperative day. Their near point averages approximately 32 cm, which is rather close to their eyes. Occasionally, my patients note problems seeing computer monitors. I find that a pair of +1.00 D spectacle magnifiers effectively addresses the problem.

Fewer than 10% of my patients with the Acrysof Restor lens complain of severe visual disturbances. The majority have only mild halos, glare, or night vision problems, or they cite no problems at all. Whereas the manufacturer stipulates that the Array and Rezoom lenses should not be used in patients left myopic due to troublesome aberrations, the Acrysof Restor lens works well in these individuals. If no cataract is present, however, I prefer not to use the IOL in low myopes (< 4.00 D).

## DOES MIXING PRESBYOPIA-CORRECTING IOLs IMPROVE INTERMEDIATE VISION?

### Methodology

The trend in mixing these lens technologies is to implant the Acrysof Restor lens in one eye and either an alternative zonal multifocal IOL (the Array or Rezoom lens) or an accommodating IOL (the Crystalens) in the patient's fellow eye in order to enhance his intermediate vision. Like many ophthalmologists, I have had to explant the Array lens when patients were unable to tolerate the halos and glare it caused. In doing so, I found that simply removing the Array IOL from their dominant eye alleviated their symptoms. This observation led me to implant the Acrysof Restor lens in the patient's dominant eye, because I had found it to be associated with a lower degree of unwanted nighttime visual phenomena than the Array or Rezoom lens. I placed the Array or Rezoom IOL in the patient's contralateral eye so that the visual side effects would be less noticeable.

To determine whether mixing presbyopia-correcting IOLs improves patients' intermediate vision, I conducted a study in which I combined the Acrysof Restor and Array or Rezoom IOLs in the aforementioned manner. My aim was emmetropia in both eyes. It may well be that the effect would have been different if I had implanted the Acrysof Restor lens in patients' nondominant eye, as some surgeons do.

Fifty-six patients undergoing cataract or refractive lens exchange surgery took part in my study. Subjects were divid-

### THE ACRYSOF RESTOR LENS VERSUS LASIK

I often use the Acrysof Restor IOL (Alcon Laboratories, Inc., Fort Worth, TX) in purely refractive surgery patients as an alternative to cornea-based laser procedures—particularly in presbyopic and hypermetropic patients who are older than 60 years, are intolerant of monovision, and have preexisting dry eye. Unlike LASIK, the Acrysof Restor lens does not necessitate monovision, which many individuals cannot tolerate. Their BSCVA is less likely to suffer with the Acrysof Restor lens than with hypermetropic laser surgery, and dry eye is much less common after IOL implantation. Finally, refractive lens exchange offers a permanent solution to patients' refractive errors.

ed into three treatment groups. Group 1 (n = 17) received an Acrysof Restor lens in their dominant eye and an Array lens in their nondominant eye. Group 2 (n = 9) underwent the implantation of an Acrysof Restor IOL in their dominant eye and a Rezoom IOL in their nondominant eye. Group 3 (n = 30) received the Acrysof Restor lens bilaterally.

### Results

On examination at 6 months, I found the refractive outcomes and UCVA's to be virtually the same among the study groups, although I was more interested in patients' ability to perform tasks under different conditions. Severe difficulty with driving at night or in the rain was reported by four Acrysof Restor/Array patients (24%), three Acrysof Restor/Rezoom patients (33%), and one bilateral Acrysof Restor patient (< 1%). Patients who received the Acrysof Restor and Array lenses experienced the highest incidence of severe halos. Although statistical significance was not reached, there was a tendency toward worse halos and difficulty driving at night and in the rain in the two groups with different IOLs.

The average intermediate acuity with both eyes open was best in the Acrysof Restor/Array group, but the result was not too different compared with the other two groups. The average near acuity, however, dropped off in the mixed-IOL groups versus patients with bilateral Acrysof Restor lenses. Spectacle independence was achieved by 61% of Acrysof Restor/Array patients, 56% of Acrysof Restor/Rezoom patients, and 87% of bilateral Acrysof Restor patients (Figure 1).

### Discussion

Richard Mackool, MD, of Astoria, New York, has reported results similar to mine. In his first 45 patients, he found that a near visual acuity of 20/20 or better increased from

44% after one eye was implanted with the Acrysof Restor IOL to 82% after bilateral implantation.<sup>3</sup> Binocular summation appears to be important. Monovision patients read better when their distance eye has a spectacle lens in front of it, allowing both eyes to read together.

Mismatching the near points interferes with binocular summation during reading. This may be why, in my experience, patients with the Acrysof Restor lens in one eye and the Array lens in the other eye have more difficulty seeing fine print at close range.

I believe that mixing current multifocal IOL technologies may not be the best option for patients. Perhaps future IOL designs will change my view.

### CONCLUSION

In my experience, the Acrysof Restor IOL provides good quality vision in a range from near through distance. My patients' spectacle-free near vision is excellent. The results of my recent study reinforce the idea that binocular summation is maximized with bilaterally implanted Acrysof Restor lenses. Subjects with two of these IOLs achieved the highest level of spectacle freedom. ■

*Con Moshegov, FRANZCO, is Director of Perfect Vision Eye Surgery in Sydney, New South Wales, Australia. He has received research support and travel reimbursement from Alcon Laboratories, Inc., and Advanced Medical Optics, Inc. Dr. Moshegov may be reached at +61 2 9482 5155; con@perfectvision.com.au.*

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