

# Halos With Multifocal IOLs

A surgeon explores neuroadaptation to reduce complications with these lenses.

BY DWAYNE K. LOGAN, MD

**W**ith the refractive, diffractive, and accommodating lens technologies available, surgeons must be familiar with each type as well as the benefits of mixing and matching these IOLs in order to provide the best care for their patients. A staged implantation strategy allows for customized lens selection that addresses patients' lifestyles and visual needs. This approach provides a postoperative patient-satisfaction safety net by allowing patients to participate in the selection of their lenses.

I primarily use the ReZoom IOL (Advanced Medical Optics, Inc., Santa Ana, CA) for presbyopic correction due to its strengths in the areas of distance vision in daylight and near intermediate vision in dim lighting. I find that this IOL best simulates the natural human crystalline lens the most compared with the AcrySof Restor IOL (Alcon Laboratories, Inc., Fort Worth, TX) and the Crystalens (Bausch & Lomb, Rochester, NY). ReZoom patients with moderately dilated pupils may complain of nighttime visual aberrations, however, in the form of halos and/or starbursts when looking at lights. In my experience, patients seldom describe these symptoms with either the AcrySof Restor IOL or the Crystalens.

I retrospectively reviewed 50 consecutive bilateral ReZoom patients and found that 31% complained of dysphotopsia and fewer than 2% experienced severe halos that prevented them from driving at night during their initial 90-day postoperative period.

In comparison, out of 25 consecutive bilateral AcrySof Restor IOL patients, fewer than 8% complained of nighttime or daytime halos, and one patient complained of a loss of normal color perception. After implanting more than 700 multifocal IOLs, I have explanted the lens of only one patient who complained of lost color vision.

I have limited experience with the Crystalens 4.5 and Five-O IOLs and have no documented complaints of nighttime visual symptoms. The unpredictability of

the refractive outcome and minimal accommodation with the Crystalens, however, have left my patients dissatisfied with their unaided near vision.

My experience with multifocal IOLs began with the bilateral implantation of the ReZoom IOL. Because of patients' complaints about their early postoperative nighttime vision and difficulty when reading small newspaper print in bright light, I switched to implanting the AcrySof Restor IOL bilaterally. Very few of the AcrySof Restor patients complained of nighttime halos, but a significant number of them had poor intermediate vision and decreased distance and near vision in dim light.

Due to my aforementioned experience, I developed a mix-and-match, staged-implantation approach that I described earlier as a patient-satisfaction safety net. After I implant a ReZoom IOL in a patient's dominant eye, I will then address any of his visual issues or concerns. If the patient is happy, I will implant a second ReZoom lens in his fellow eye. If the patient complains of inadequate near vision, I will implant an AcrySof Restor IOL in his fellow eye. If the patient's chief complaint is nighttime halos, I will spend extra chair time explaining my clinical plan to help the patient neuroadapt to his new multifocal IOLs.

## TECHNIQUE FOR REDUCING HALOS Neuroadaptation

*Neuroadaptation* is a new buzzword for refractive cataract surgeons. Recent data presented as part of an online patient registry involving 20 surgeons showed that, on average, approximately 65% to 67% of the 98 patients included in a 6-month follow-up group achieved an improvement in halos, glare, and ghost images<sup>1</sup> (Figure 1). Although many patients adapt quickly and successfully to multifocal lenses, some adjust more slowly or not at all.

I explain the concept of neuroadaptation to all of my symptomatic patients and tell them that their halos will likely dissipate in time. In my experience, the

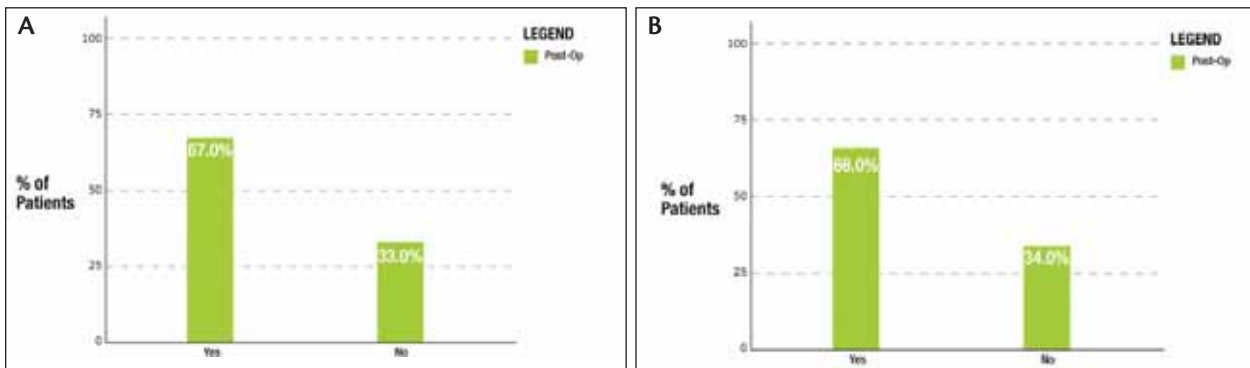


Figure 1. Sixty-seven percent of patients reported an improvement in halos between the 6-week and 6-month follow-up periods (A). More than 65% of patients reported an improvement in glare between the 6-week and 6-month follow-up periods (B).

process of neuroadaptation cannot begin until I have eliminated all postoperative variables, including an inadequate tear film, corneal epithelial and stromal haze, spherocylindrical refractive errors, decentration of the IOL, capsular fibrosis, vitreous opacities, and cystoid macular edema (CME).

#### Dry Eye

The incidence of dry eye symptoms, such as blurry and fluctuating vision, increases dramatically after cataract surgery and intraoperative limbal and corneal relaxing incisions in patients with preoperative ocular surface disease.<sup>1-3</sup> Tear film insufficiency can result in decreased visual acuity, excessive glare, and halos at night. I instruct my multifocal IOL patients to use artificial tears, Lotemax (Bausch & Lomb), and Restasis (Allergan, Inc., Irvine, CA) for at least 3 to 6 months postoperatively, with the understanding that Restasis takes 3 to 4 weeks to start working. I also place silicone punctal plugs if necessary.

#### Astigmatism

I recommend treating astigmatism intraoperatively with limbal and/or corneal relaxing incisions based on the patient's corneal topography. More than 0.50 D of sphere and 0.50 D of cylinder increase patients' perception of halos at night. Because I believe cylindrical refractive error plays the more significant role in the severity of halos, I feel that controlling astigmatism at the time of surgery is important. At 12 weeks postoperatively, surgeons can treat stable residual refractive cylinder by repeating limbal relaxing incisions, and surface ablation can remedy remaining spherical refractive errors. If I am only treating cylinder, I prefer a limbal or corneal relaxing incision to correct up to 3.00 D of cylinder. If I am treating mixed astigmatism or greater than 3.00 D of cylinder I will perform LASEK.

#### The IOL's Centration

It is not uncommon for my patients to complain that they see a comma or crescent secondary to decentration of the pupil on the central optic of the ReZoom lens. I find this problem more irritating than the 360° halo some patients perceive despite a perfectly centered ReZoom IOL.

My first step is to determine if the lens is optically centered. I have the patient look into the center of the two half-moon lights from a microscope, and I adjust the IOL so that the light reflex is directly in the center of the ReZoom or AcrySof Restor IOL. If the microscope has only one light source, I instruct the patients to stare at it while I center the central optic on the light reflex.

If the pupil is not symmetrical around the central optic, I often perform an iridoplasty with an argon laser. This procedure not only decreases visual aberrations, but it also improves patients' near vision with either the ReZoom or AcrySof Restor IOL.

#### Capsular Fibrosis

During the first postoperative month, early capsular fibrotic changes can occur, giving the appearance of an orange peel on the capsule. At night, patients may see starbursts. With monofocal IOLs, I typically wait 3 months before considering an Nd:YAG capsulotomy. With the ReZoom and AcrySof Restor IOLs, however, I have found that performing this procedure 4 to 6 weeks postoperatively effectively reduces patients' visual aberrations and halos and permits neuroadaptation to begin. I consistently confirm that the IOL is properly centered prior to performing an Nd:YAG capsulotomy. I have repositioned eight AcrySof Restor lenses and three ReZoom IOLs; many of these patients were referred to me because they were unhappy with their vision and results after a Nd:YAG capsulotomy results. Repositioning or transplanting a multifocal IOL with an open capsule may result in vitreous loss and require an anterior vitrectomy. I have

explanted one AcrySof Restor IOL in an eye that had an open capsule following an Nd:YAG laser treatment and required an anterior vitrectomy. I recommend avoiding a Nd:YAG capsulotomy if you are considering explantation.

### Vitreous Opacities

Even if they do not cause halos, vitreous opacities can be very annoying to patients. I refer these patients to a retinal specialist for possible surgical intervention.

### CME

I have found that patients with decreased visual acuity secondary to CME sense that halos are symptomatic. Several modulators can contribute to the cause of CME, including interleukins and prostaglandin E2 that are released by lens epithelial cells. These and other mediators break down the blood-retina barrier, which leads to CME.<sup>4</sup> I believe that excellent cleanup of residual lens cortex along with the pre- and postoperative use of topical NSAIDs mandatory to prevent CME.

### IN SUMMARY

After I have eliminated or stabilized the aforementioned variables and I am happy with the surgical outcome, I can confidently tell patients that they are doing great. I have

found that, when I am happy, my patients are, too. The primary concern of my ReZoom IOL patients is the mild halos they see around lights at night during the initial 6-month postoperative period. The mistake I made when I began implanting the ReZoom IOL was expecting patients' halos to disappear quickly. In reality, this dysphotopsia slowly dissipates over 6 to 12 months, as patients' brains adapt to the multifocal zones of the IOL. I now explain to my patients that the ReZoom IOL offers an effective combination of stable distance and near-intermediate vision. I tell them that, in the long run, the neuroadaptive process will enable them to enjoy lifelong benefits. ■

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