

A Systematic Approach to Selecting a Premium IOL

One group's method for basing decisions on specific preoperative subjective and objective criteria.

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One of the strongest factors in the successful use of premium IOLs is determining which model is the most appropriate for a given patient. Accurate choices require a brief preoperative interview to evaluate the patient's visual needs and preferences and to measure the refractive error and pupillary size. To facilitate this process, we created a chart (Table 1) that summarizes what we consider to be the optimal IOL selections based on the aforementioned criteria. The recommended lenses may represent a mixed or a matched approach. This article presents the rationale behind our chart and selections.

DISTANCE VISION

Ophthalmologists have long considered monofocal optics to be the optimal means for correcting distance vision. Whether the physiologic pupil is small or large, a monofocal optic will provide the best-quality distance vision. For that reason, the monofocal Crystalens Five-O and HD accommodating IOLs (Bausch & Lomb, Rochester, NY) are our premium lenses of choice in the category of distance vision. Distance-oriented patients will always have some degree of near and intermediate visual needs as well. The Crystalens should perform adequately in these areas by providing moderate levels of accommodation through translational movements in the preoperative emmetrope or hyperope¹ plus accommodative arching in the preoperative emmetrope, hyperope, and higher myope.²

Patients seeking distance correction who are emmetropic or hyperopic with small pupils preoperatively may also be well served by the ReZoom multifocal IOL (Advanced Medical Optics, Inc., Santa Ana, CA). Their small pupils will maximize the benefit of the lens' dominant (central) distance optic. Unlike other patients, presbyopic hyperopes and emmetropes will be more tolerant of the positive spherical aberrations created by the ReZoom IOL's transi-

tional zones. These individuals generally have clinically significant preoperative levels of positive spherical aberration³ to which they have cortically adapted as they have aged. We have therefore found that they require less postoperative adaptation to multifocal lenses.

NEAR VISION

The AcrySof Restor IOL (Alcon Laboratories, Inc., Fort Worth, TX) is the only near-dominant premium lens. In a preoperative emmetrope or hyperope with a large pupillary diameter (approximately 4 to 6 mm or greater when dilated), the IOL's peripheral refractive portion (beyond a 3.6-mm diameter) provides effective distance power. For near vision, the central near refractive power aligns well with the constricted pupil. We find that any positive spherical aberration created by the multifocality and diffractive (apodized) portion of this IOL is significantly less with the AcrySof Restor Aspheric IOL (Alcon Laboratories, Inc.) and is thus well tolerated by preoperative emmetropes or hyperopes with positive spherical aberrations.

The AcrySof Restor IOL's limitations include a lack of intermediate visual power and a compromise in distance vision with smaller pupillary diameters (less than 4 mm). Owing to the lens' dominant near power, however, this IOL is often the ideal choice to mix with the Crystalens. Through a combination of the optical characteristics of each lens, patients with near visual needs/preferences and small pupils benefit from quality near vision with the AcrySof Restor Aspheric IOL (for emmetropes or hyperopes) or the AcrySof Restor IOL (for myopes) in their dominant eye and the Crystalens in their nondominant eye for intermediate and distance vision.

EQUAL DISTANCE AND NEAR VISION

Most commonly, patients being screened for premium IOLs state their need and interest in distance and near

TABLE 1. PREMIUM IOL SELECTIONS

Patient's Visual Needs and Preference	Preoperative Pupillary Size and Refraction			
	Pupillary Size (constricted to dilated) 2 to 5 mm or less		Pupillary Size (constricted to dilated) 3 to 6 mm or greater	
	Myopia (> 3.00 D)	Emmetropia or hyperopia	Myopia (> 3.00 D)	Emmetropia or hyperopia
Distance	Crystalens	Crystalens or ReZoom	Crystalens	Crystalens
Near	<i>Mixed Optics</i> Acrysof Restor ^a and Crystalens	<i>Mixed Optics</i> Acrysof Restor Aspheric ^a and Crystalens	<i>Mixed Optics</i> Acrysof Restor ^a and Crystalens	Acrysof Restor Aspheric
Equal distance and near	Crystalens	<i>Mixed Optics</i> Crystalens ^a and Acrysof Restor Aspheric	Crystalens	<i>Mixed Optics</i> Crystalens ^a and Acrysof Restor Aspheric

^aIndicates dominant eye.

vision. None of the currently available premium IOLs provides the highest quality vision at both ranges.

In most patients, the Crystalens provides sharp distance and intermediate vision and adequate near vision through transitional movement and accommodative arching. Individuals with 3.00 D or more of myopia may obtain the best range of intermediate and near power with this IOL.⁴ The lower-powered silicone optic (in myopes) has a thinner center than the higher, plus-powered optic (in emmetropes and hyperopes). The thin center allows greater arching of the lens, which results in additional plus power. Translational movement requires millimeters of anterior shifting to induce plus power. In contrast, mere microns of bending or accommodative arching of the curvature of the IOL's optic provide the potential for far greater amounts of induced plus power than translational movement can produce. The Crystalens may also be a better choice for high myopes than a multifocal IOL, because these patients tend to have negative spherical aberrations. This group has never been happy with the positive spherical aberrations introduced by multifocal optics.

Patients who desire strong vision at distance and near may be well suited to a combination of the Crystalens and either the AcrySof Restor Aspheric IOL (for emmetropes or hyperopes) or the AcrySof Restor lens (for myopes). Implanting a Crystalens in the patient's dominant eye and the AcrySof Restor lens in his nondominant eye should provide optimal distance, intermediate, and near vision while maintaining uncompromised binocular distance vision (as opposed to a standard monovision approach).

CONCLUSION

Surgeons can select the proper premium IOLs for successful outcomes by taking into account patients' visual

needs and preferences, assessing their preoperative refractive error and pupillary size, and analyzing the available IOLs' optics, strengths, and weaknesses. This process of lens selection can lead to greater efficiency, more accurate matching of IOLs and patients, and optimal visual results. It can also minimize patients' need for cortical adaptation while maximizing their satisfaction. ■

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