

# Is Monovision Still an Option for Presbyopia?

The author seeks to provide the option that has the greatest likelihood of success as defined by the patient's satisfaction.

BY GRAHAM D. BARRETT, MD

Several options are available to surgeons who would like to offer a solution to their patients' presbyopia. These include corneal inlays, accommodating and multifocal IOLs, and monovision.

Many surgeons attempt to custom fit a particular solution to an individual patient depending on factors such as his or her lifestyle, personality, and occupation. My approach is to select the option that I believe has the greatest likelihood of success as defined by patients' satisfaction, with the least amount of compromise in their quality of vision. Despite many technological advances, modest monovision remains my procedure of choice. It can be offered in the form of corrective laser surgery for phakic patients, but I have more experience with pseudophakic monovision in patients undergoing cataract surgery or in elderly patients with significant hyperopia undergoing refractive lens exchange.

## CLASSIC MONOVISION VERSUS MODEST MONOVISION

I think it is important to distinguish between classic monovision, in which the level of myopia in the eye targeted for near vision is in the range of -2.00 D, and modest monovision, in which the targeted degree of myopia is -1.25 D. Although the likelihood of total spectacle independence is less with a lower level of myopia, limiting the anisometropia to approximately -1.25 D reduces the likelihood of a reduction in the patient's binocular contrast sensitiv-

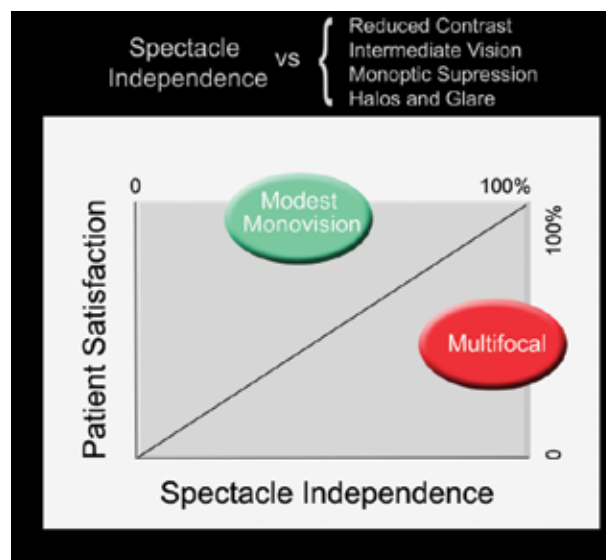


Figure. Patients with multifocal IOLs are not infrequently totally spectacle independent but dissatisfied with the outcome. This is unlike modest monovision, where spectacles may be required for some activities but patients are typically highly satisfied.

ity, asthenopia, and a loss of stereoacuity that can occur with higher levels of anisometropia. I suspect that surgeons overestimate the importance of total spectacle independence as an index of patients' satisfaction after undergoing cataract surgery. Patients typically rank quality of vision and the avoidance of dysphotopsia as more important than total spectacle

independence when judging their satisfaction after cataract surgery.

A prospective study comparing modest monovision to diffractive multifocal implants was performed at Moorfields Eye Hospital in London and the results presented at the European Society of Cataract & Refractive Surgeons annual meeting in Vienna in 2011. Among the findings, patients with multifocal IOLs reported a much higher level of total spectacle independence (71%) than those with modest monovision (25%), but 6% of patients in the study required a lens exchange—all in the multifocal group.<sup>1</sup> It is interesting to speculate that one of the reasons for patients' disassociation of spectacle independence and satisfaction is that glasses typically do not improve a person's reading ability in the absence of refractive error with a multifocal implant. In contrast, reading glasses help almost all patients with modest monovision, who may appreciate the additional assistance for particular visual tasks.

## HOW TO INCORPORATE MONOVISION IN PRACTICE

Surgeons who are often unaccustomed to using monovision in their practice may be uncertain of the best way to incorporate the solution into their practice. My approach is relatively simple and can be condensed to the "ABCDs of Monovision."

**Address the alternatives.** I tell patients that a monofocal implant provides the best quality of vision but requires reading glasses. I explain that a multifocal lens can provide spectacle independence but at the expense of contrast sensitivity and possibly with the induction of glare and halos. I conclude by saying that accommodating lenses are relatively unpredictable.

**Broach monovision.** I then speak in further detail about the possibility of monovision and explain that optimal quality of vision can be obtained with spectacle correction. Although intermediate acuity is excellent, I add, typically some correction will be required for the sustained reading of small print. I caution patients that this option requires achieving excellent unaided distance acuity in the first eye.

**Choose distance.** I prefer to operate first on the eye with the denser cataract and to target emmetropia. I favor correcting the dominant eye for distance, if possible, particularly for a refractive lens exchange, but I do not think this is a major issue for cataract patients.

**Demonstrate defocus.** If the first eye achieves at least 6/9 (20/32) unaided visual acuity, then I demonstrate the amount of myopic defocus with a 1.25 D lens

and a trial frame. This is so that patients can appreciate the impact on distance acuity as well as the level of near vision that they will achieve. In my practice, more than 50% of patients elect to have modest monovision.

Occupation, personality, and refractive error are not critical screening factors in patient selection for modest monovision. Although multifocal IOLs may not be well suited to discriminating individuals such as architects or engineers, these professionals are acceptable candidates for modest monovision, as are artists and truck drivers (spectacles can be worn if necessary for activities such as night driving, if required). In addition, minor levels of defocus created by astigmatism, posterior capsular opacification, and macular dysfunction have a limited impact on visual acuity with modest monovision compared with multifocal implants. Suitable patients simply require a potential visual acuity of at least 6/9 in both eyes and adequate comprehension of the suggested refractive strategy.

## CONCLUSION

Modest monovision continues to be an attractive solution to presbyopia and, in my opinion, should be considered a "premium" solution. It requires expert surgery, knowledgeable selection of IOLs, and the utilization of toric implants or corneal incisions to reduce astigmatism. The popularity of the technique is growing, and future complementary options include the concept of a monofocal IOL with an extended depth of focus. Based on my clinical experience with such an investigational IOL, it is feasible to gain an additional 1.00 to 1.50 D in depth of focus by incorporating positive spherical aberration without the loss of contrast. Together with a modest level of monovision, this technology could increase the level of spectacle independence while retaining the blended or binocular nature of modest monovision with less impact on stereoacuity. ■

*Graham D. Barrett, MD, is an associate professor of ophthalmology at The Lions Eye Institute in Nedlands, Western Australia, and is head of the Department of Ophthalmology at Sir Charles Gairdner Hospital in Nedlands, Western Australia. Dr. Barrett may be reached at +61 8 9381 0872; barrett@cylle.uwa.edu.au or graham.barrett@uwa.edu.au.*



1. Zhang F, Sugar A, Jacobsen G, Collins M. Visual function and patient satisfaction: comparison between bilateral diffractive multifocal intraocular lenses and monovision pseudophakia. *J Cataract Refract Surg.* 2011;37(3):446-453.