

MONOVISION: UNDERESTIMATE AT YOUR PERIL

Monovision remains the best competition to more sophisticated options such as multifocal and trifocal IOLs.

BY ARTHUR B. CUMMINGS, MB ChB, FCS(SA), MMED(OPHTH), FRCS(EDIN)



Monovision. One vision. One eye for distance vision, one eye for near. Sounds strange at first. However, if the patient is deemed a good candidate following a comprehensive evaluation, if the targets have been carefully chosen, and if the compromise is understood, then I contend that multifocal and trifocal IOLs will have to be

very good indeed to compete with monovision.

THE COMPROMISE

What is the aforementioned compromise? Once a patient reaches age 45 and older, at present there is no solution to provide him or her with the vision of a 20-year-old emmetrope. When a presbyope comes for a consultation, therefore, our conversation often starts with, "We are going to try to find the compromise that suits you best." Put another way, "We are going to try to provide you with the most functional vision for your needs."

Compromise No. 1. The first compromise might be perfect distance vision, targeting emmetropia and hopefully better than 6/6 UDVA in both eyes with a high-fidelity outcome. Where is the compromise here? It is the fact that, if the patient is presbyopic or pseudophakic with a monofocal IOL in situ, he or she cannot read without reading glasses.

Compromise No. 2. The second compromise may be a premium IOL with multifocal or trifocal optics. Here, the compromise is not the difference between the two eyes, but rather the way in which light behaves in each eye. Trifocal IOLs and extended depth of focus IOLs have both provided excellent compromises in first-time procedures, but they remain a compromise, with all light entering the eye being separated into different focal points. And the compromise is maybe a little greater in an eye with previous corneal refractive surgery, depending on the quality of the corneal surgery and the resultant asphericity.

Compromise No. 3. The third compromise to contemplate is correcting both eyes for perfect near vision (just for illustration, as few would opt for this choice). Now the patient's reading vision is perfect, but the compromise lies in the fact that he or she requires glasses for distance vision.

HELPING PATIENTS GRASP MONOVISION

"Today, many of us are required to see well at three distances: near, intermediate, and far. The problem is that we have only two eyes. To see perfectly at all three distances would require three eyes."

Here is where monovision becomes more understandable to patients: "So, can I leave one eye slightly short-sighted, providing me better near vision, while the other eye provides excellent distance vision?" The answer is, "Yes, you can, if you find the compromise satisfactory and better than the other compromises I described."

Another comment that makes monovision eminently understandable is, "Today, many of us are required to see well at three distances: near, intermediate, and far. The problem is that we have only two eyes. To see perfectly at all three distances would require three eyes." Patients immediately grasp the limitations of monovision when they hear this explanation.

ESTABLISHING CANDIDACY AND TARGETS

How does one establish that a patient is a good candidate for monovision, and how do we determine targets? I normally demonstrate full correction through the auto-phoropter and ask the patient to rate this as 100% and consider this his or her reference point for the rest of the evaluation. I then show the patient one eye fully corrected for distance vision and the other under-corrected by -1.50 D for starters.

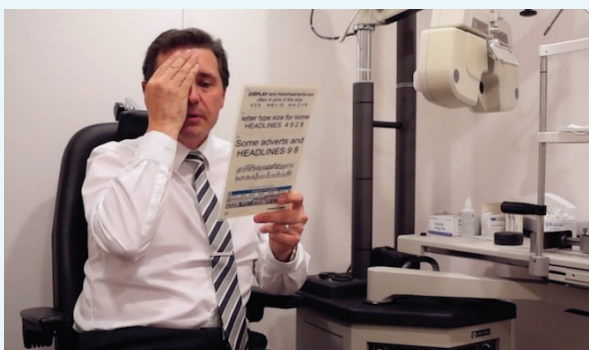
WATCH IT NOW

How to Test for Monovision



https://www.youtube.com/watch?v=GQtUd0_wNs

How to Get the Best From Monovision



<https://youtu.be/TZYQK-hPWvY>

I demonstrate this both ways—that is, with the left eye for distance and then with the right eye for distance. Typically, the patient will prefer one over the other. If he or she does not have a preference, then we typically advise patients who drive a lot to correct the right eye for distance (if they drive on the left side of the road; it would be the opposite for those living in continental Europe or the United States).

Once you have established the sensory dominance as described above (the near-far combination that feels more comfortable), then the refractive target for the reading eye is determined. Once more, both eyes are fully corrected, and the distance stereo chart is projected. At this point, the patient can normally see which bars stand out more prominently on the stereo chart. Once stereo vision is established, then the nondominant eye is defocused by adding plus until the distance stereo vision is compromised. When this happens, we have gone too far, and then some of the plus is removed until the stereo vision returns.

Many patients still have full distance stereo vision with full correction in one eye and -1.25 D under-correction in the reading eye. Some can go to -1.50 D or even higher and still

AT A GLANCE

- Using appropriate language and analogies can help patients understand the limitations of monovision.
- A careful history allows the surgeon to determine where the best target should be, given the patient's needs.
- Any aspect of monovision that is not perfectly tolerated can be remedied with a pair of spectacles for a specific task, although the percentage of patients requiring glasses is likely to be low.

have decent distance stereo vision. This evaluation has just determined the limit of the defocus for the reading eye (see *Watch It Now: How to Test for Monovision*).

A careful history then allows the surgeon to determine where the best target should be, given the patient's needs. For example, someone who uses a computer all day will likely prefer plano/-1.00 D to plano/-1.75 D, even if he or she could tolerate the greater anisometropia and maintained stereopsis for distance.

A visual lifestyle monitor (Vision Lifestyle Monitor; Vivior) can provide clinicians with objective data of exact working distances and time spent at these distances in an efficient manner. This personal defocus curve can then be treated with a level of monovision that suits the patient's visual surroundings closer than any conversation or questionnaire can. Consider that a 6'6" man calls *reading vision* or *reading a book* the same as a 5'4" person, yet their working distances are completely different.

Any aspect of monovision that is not perfectly tolerated can be remedied with a pair of spectacles for a specific task, such as driving at night. In my practice, 7% of patients with monovision wear glasses when driving at night, but 93% are entirely free from any glasses whatsoever. Before resorting to glasses, one can also offer brain training exercises that work well for most patients who are struggling with some aspect of monovision (see *Watch It Now: How to Get the Best From Monovision*).

CONCLUSION

Even dismissing the cost benefits of monovision, from a performance perspective it remains the biggest competition to more sophisticated options such as multifocal and trifocal IOLs or corneal inlays. It is my belief that, if monovision is assessed and managed as I have just outlined, there is the potential to further increase its acceptance. ■

Arthur B. Cummings, MB ChB, FCS(SA), MMed(Ophth), FRCS(Edin)

■ Consultant Ophthalmologist, Wellington Eye Clinic and Beacon Hospital, Dublin, Ireland

■ Associate Chief Medical Editor, *CRST Europe*

■ abc@wellingtoneyeclinic.com

■ Financial disclosure: Medical Advisory Board (Vivior)