

## Vision Correction for Presbyopes: Matching Technology with Lifestyle

### Patient Selection & Counseling

When deciding on the best procedure for presbyopes, several factors come into play. First, explore the patient's attitude towards reading glasses. If their priority is crisp distance vision both day and night and they are fine with using reading glasses for near tasks, full-distance LASIK, PRK, Phakic IOLs, or refractive lens exchange with monofocal IOLs are the best choices.

For those wishing to see without glasses most of the time, explore classic monovision with LASIK, PRK, or refractive lens exchange, or modified monovision with CK. Explain to the patient that monovision is functional and not perfect. They are trading quality for quantity. They probably will still need driving glasses at night or reading glasses for small detailed tasks. As long as they are fine with that idea, then monovision is a great option. Those who are already in monovision contacts will be great candidates. We let them know that we may increase the amount of reading power in the non-dominant eye to allow them to maintain good near vision as the presbyopia advances.

The process of achieving monovision depends on their refraction. CK is best for emmetropes or mild hyperopia. LASIK, PRK, Phakic IOLs, and refractive lens exchange with monofocal IOLs are best for everyone else, depending on their age and the status of their lens. Some patients may benefit from a contact lens trial to simulate monovision in "real life".

We introduce presbyopic IOLs to all the patients undergoing lens replacement surgery – either cataract surgery or refractive lensectomy. The type of presbyopic IOL we recommend for each patient depends on what tasks occupy most of their time – distance, intermediate, or near – and whether the patient is willing to trade off some quality of night time vision for the quantity of near vision they will gain after the procedure. ■

### Preoperative Workup

When we consider lens replacement surgery, I listen to the patient's symptoms, measure BCVA, and do glare testing. Some patients may feel apprehensive because they perceive the procedure as invasive. I explain to the patient that in the hands of an excellent, experienced surgeon, modern lens surgery is nearly as safe as corneal refractive surgery. A cataract and lens surgeon using topical anesthesia, no stitch, ultrasound procedure can help them see better the same day.

Accurate refraction is important to determine BSCVA. Often, however, accurate refraction is difficult to achieve due to decreased BCVA, but do the best you can. Knowing that someone has significant astigmatism prepares them for a possible upgrade with LASIK after the lens replacement procedure. BCVA does not govern the patient's readiness for surgery. We always perform a glare test after the refraction by shining a transilluminator just below the visual axis in the phoropter to see how it affects VA. Someone with 20/30 BCVA can drop significantly with the glare test validating the patient's symptoms.

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#### Full distance LASIK or PRK is best for...

Patients wearing full distance contact lenses with reading glasses over them.  
Active patients engaged in sports, driving, travel

#### Monovision LASIK or PRK is best for...

Patients wearing monovision contact lenses  
Patients with anisometropia, but good best-corrected vision in both eyes

#### NearVision CK is best for...

Plano presbyopes or mild hyperopes interested in improving near vision  
Mild hyperopia in a non-dominant eye after cataract or lens procedure

#### Refractive Lens Exchange is best for...

Presbyopic patients with high myopia or hyperopia

#### Monofocal IOL is best for...

Active patient who needs good distance and night-time vision  
Patient who already has monofocal IOL in the other eye

#### Crystalens IOL is best for...

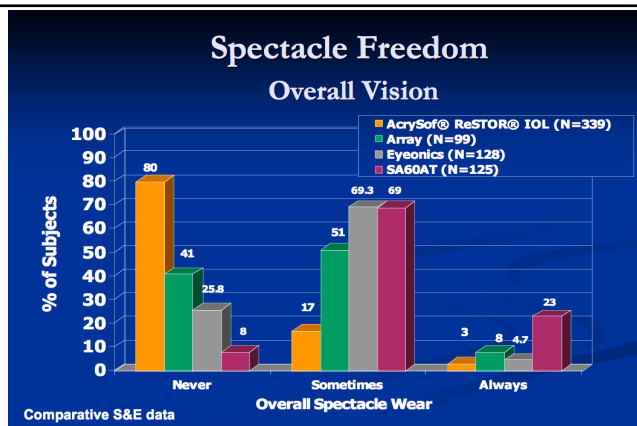
Patients with distance-intermediate (computer) vision needs  
Patients with pupil size less than 6 mm

#### ReZoom IOL is best for...

Patients with distance-intermediate (computer) vision needs  
Patients with mobile pupil (to take advantage of optical zones)

#### ReStor IOL is best for...

Patients with distance-near (reading) vision needs  
Patients for whom the benefit of good reading vision outweighs potential dysphotopsia at night



**Figure 1:** Over 90% of patients with presbyopic IOLs report spectacle independence most of the time.

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When deciding which IOL is right for a patient, first see if they already have an IOL in one eye. To optimize their postop vision, the same type of lens should be used in the fellow eye. Someone with a single focus lens one eye, should get the same in the other eye, with possible consideration for monovision. Presbyopic IOLs are a great choice for those who want binocular vision. The pupils need to be evaluated before considering certain lens designs. Excessively large pupils may preclude having certain presbyopic IOL due to the optic size. If the pupil does not dilate well, the patient may not utilize the different optical zones in the ReStor or ReZoom. The patient should be counseled about possible dysphotopsia. If a patient requires excellent night time vision, single focus IOL is a better choice for them. ■

## Postoperative Care Pearls

The pre-op exam is focused on gathering accurate data and helping the patient become comfortable before their procedure. The post-op exam focuses on helping the patient achieve optimum vision and be comfortable with normal post-procedural course. Some patients may not remember what we discussed about the recovery period. It helps to discuss the healing course again with them after the procedure.

It helps to remind patients with monovision LASIK or PRK that it is normal to take several weeks to several months to adjust to monovision, even if they had monovision with contact lenses. Hyperopes need to be assured that the functional range, which starts closer in, will push out to where we planned it to be after a couple of months. Time is definitely on their side. The same holds true for CK. In addition, assure the patient that glare and halos are perfectly normal for the first few months of healing. A prescription may be necessary for night driving. We typically back off on the sphere for the near eye as not to create a high amount of anisocoria for the patient to adapt to. They may also need a pair of computer/reading glasses for sustained or detailed near tasks.

If you notice refractive error or BSCVA worsening as early as several months after corneal refractive surgery, evaluate the lens. Small lenticular changes may be responsible and the patient should be counseled about lens replacement procedure.

We do lens replacement procedures one eye at a time, usually separated by a month providing normal healing after the first surgery. There will be a period of time when the patient will need to remove the lens in their glasses for the operated eye or not wear the glasses and depend upon that eye to perform their visual tasks. Before surgery is performed on the second eye, a manifest refraction must be done on the eye with the IOL to help in the calculation of the second IOL. With accommodating IOLs like the Crystalens you need to push plus. If only one eye is planned for a presbyopic IOL, the patient may experience near symptoms due to the accommodative difference between the operated and non-operated eyes. In this case, a pair of glasses is needed to balance the two eyes for prolonged reading.

Patients may experience dysphotopsias following placement of presbyopic IOLs. However, uncorrected refractive error is still the #1 reason for night-time glare and haloes. Therefore, the patient may benefit from an additional corneal procedure to fine-tune the result.

Dysphotopsia is more prominent during the first month, but it will improve. Those who continue to have bothersome glare, may benefit from the same IOL placement in the other eye. This will aid summation and enhance neuroadaptation.

The patients with presbyopic IOLs usually like the benefit of near vision more than they dislike the dysphotopsia at night. If the patient is not sure, prescribe -2.50 D spectacles to demonstrate the loss of near vision.

Rarely, does patient chose to replace the IOL.

Posterior capsular opacity can be more symptomatic in patients with presbyopic IOLs. Consider sending the patient back to the surgeon for YAG capsulotomy.

Following lens procedures, Pred Forte 1% is used qid for 2 weeks, then bid for 2 weeks. Be sure to check IOP as long as they are on the steroid. Acular is used bid for 4 weeks and Vigamox or Zymar qid for 1 week. It is also important to find the BCVA following surgery to rule out CME following surgery. It is typical to find about 1+ cell during the first 1-2 weeks and corneal edema especially around the incision points. ■

- o If considering laser vision correction or CK, rule out cataracts
- o Rule out significant dry eyes
  - o For both corneal refractive and presbyopic IOL procedures, dry eyes may degrade the quality of vision
- o Evaluate corneal suitability for laser vision correction or CK prior to cataract / lens procedure
  - o Laser vision correction or CK may be required to fine tune the result
  - o Corneal topography, pachymetry, OCT scan become part of the preoperative workup for all cataract / lens replacement patients
  - o Make sure patient is out of contact lenses long enough for accurate corneal assessment and keratometry prior to IOL calculation
- o Evaluate pupil size and mobility
  - o Fixed pupils may preclude patients from multifocal IOLs
  - o Pupils too large may preclude patients from certain IOLs with smaller optics
- o Rule out weak zonules (i.e. pseudoexfoliation, trauma, etc)
  - o Presbyopic IOLs require accurate and stable lens placement. Weak zonules may result in displacement of the lens and degradation of vision
- o Evaluate for strabismus and amblyopia
  - o Ocular summation is required for neuroadaptation following presbyopic IOL implantation

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