

disadvantages can be affected by pupil size,⁶⁰⁵ IOL tilt⁶⁰⁶ and decentration,⁶⁰⁷ and whether the spherical aberration of the IOL and the patient's cornea are custom matched.^{324, 608-613}

Between 15% and 29% of cataract patients have more than 1.5 D of keratometric astigmatism.^{614, 615} Toric IOLs, which correct for astigmatism, have been shown to decrease eyeglass dependence compared with nontoric monofocal IOLs.⁶¹⁶⁻⁶¹⁹ In addition, they may offer better predictability and stability of correction compared with incisional astigmatic keratotomy, based on a 2019 Cochrane Systematic Review.⁶²⁰⁻⁶²⁴ (*I+*, *Good*, *Strong*)

For a toric IOL to be effective, the axis and magnitude of corneal or keratometric astigmatism must be accurately measured, and the IOL must be accurately and permanently aligned.⁶²⁵ The lenticular contribution to refractive astigmatism is eliminated with cataract surgery; thus, preoperative manifest refractive astigmatism is irrelevant in astigmatism planning. Toric IOL axis misalignment may reduce the desired refractive effect or may even worsen the overall astigmatism.⁶²⁶ Because toric IOLs do not correct irregular astigmatism, they should be used cautiously in patients who might require a rigid contact lens postoperatively.⁶²⁷ Modified keratometers and aberrometers, collectively known as intraoperative refractive guidance devices, are available to help with IOL power refinement and toric IOL alignment intraoperatively.^{328, 628-631} An effort should be made to determine the true corneal refractive power, which incorporates both the anterior and posterior corneal power, either by direct assessment or by algorithmic adjustment.^{620, 632-638}

Use of presbyopia-correcting IOLs or monovision may improve quality of life by reducing eyeglass or contact lens dependence after cataract surgery.⁶³⁹ For each of these options, patient selection is critical. Certain patient-related factors may be associated with suboptimal postoperative performance and reduced patient satisfaction. Surgeons must understand an individual patient's lifestyle and expectations so that the most appropriate IOL can be selected. Patients should be informed of the potential compromise in quality of vision associated with the various choices.⁶⁴⁰⁻⁶⁴⁴

Monovision involves correction of one eye for distance vision and the fellow eye for intermediate or near vision. The success of monovision depends on interocular blur suppression where the blurred image from one eye does not interfere with the image from the eye in focus.⁶⁴⁵ In one study, when the dominant eye was corrected for distance visual acuity, the overall monovision acceptance rate following cataract and IOL surgery was 90% in patients with cataract who desired independence of correction with eyeglasses.⁶⁴⁶ In another study that analyzed modified monovision (-0.75 D anisometropia) versus conventional monovision (-1.75 D or more anisometropia), the authors found that binocular vision in relation to contrast sensitivity and stereopsis was better preserved with modified monovision but near vision was compromised.⁶⁴⁷ In a small nonrandomized study comparing patients who had bilateral multifocal IOLs versus bilateral monofocal IOLs implanted to achieve monovision, there was no statistical difference in bilateral uncorrected distance and near vision or in the satisfaction scores.⁶⁴⁸ Patients with a history of successful adaptation to monovision with eyeglasses or contacts lenses are particularly well suited for this modality.^{649, 650} Such patients may benefit from distance-corrected eyeglasses for driving at night. In general, patients with latent strabismus, macular disease, or optic nerve disease are poor candidates for monovision, unless they have previously done well with optical correction.⁶⁵¹⁻⁶⁵⁵

Presbyopia-correcting IOLs can be classified as multifocal or accommodative. Multifocal lenses have near and distance elements in the optic of the lens, and accommodative lenses change position, shape, or refractive index. When the focal points of the defocus curve of a multifocal IOL are relatively close together, producing a minimal drop in visual acuity between peaks, the lenses are said to have extended depth of focus (EDOF).⁶⁵⁶ There is usually a measurable drop in unaided visual acuity between the peaks of the defocus curve foci of a standard bifocal multifocal IOL.

Extended depth of focus lenses can be implanted for bilateral distance focus or in a monovision arrangement. They are often favored over full-add bifocal or trifocal IOLs for eyes with subtle macular pathology or a history of keratorefractive surgery.⁶⁵⁷⁻⁶⁶⁰ Extended