

# Types of Intraocular Lenses

During cataract surgery, a number of intraocular lenses may be inserted to help with the visual demands of the patient. Intraocular lenses have the ability to adjust the focus of an eye, and therefore are able to correct conditions such as shortsightedness (myopia), long sight (hypermetropia) and astigmatism. Some lenses have a ability to allow vision at far and near distances (Presbyopic correction lenses), but these lenses have pros and cons, and a detailed examination and consultation is required before choosing your intraocular lens to ensure that it is bespoke for your visual requirements.

## Intraocular lens choices

There are now a number of newer choices available for intraocular lens implants, and the choice can sometimes be confusing, but Mr Ismail will be happy to explain and discuss the options which may be sensible for you to consider.

## Monofocal intraocular lenses

This is the most commonly implanted lens during cataract surgery. Intraocular lenses are well tolerated within the eye, and advances in lens material have allowed the lens to fold and unfold in the eye, allowing a much smaller cataract surgery incision. Monofocal intraocular lenses provide high quality optics and have a single fixed focus. This focus is usually set for distance, allowing excellent unaided visual acuity for common tasks such as driving, playing sports and watching television. Excellent quality reading vision can be achieved with a simple pair of reading spectacles.

## Toric intraocular lenses

Patients with astigmatism can sometimes benefit from an intraocular lens which has an astigmatic correction built in. The amount of astigmatism to be corrected is measured accurately by calculating the power of the cornea of the eye. A bespoke intraocular lens, with the correct astigmatic correction is then implanted during cataract surgery. Patients with a significant amount of astigmatism require glasses for all tasks. A toric intraocular lens can help give the chance of excellent unaided vision in the distance. Toric intraocular lenses can also have an intermediate or multifocal correction.

## Presbyopic correction intraocular lenses

In a non-myopic person, presbyopia is the normal age-related reduction in the ability to focus the eyes for close distance. This process usually starts after the age of 40, and there becomes a requirement for spectacle correction for near vision tasks. By the age of 60, much of the ability to focus the eyes for close tasks has been lost. During cataract surgery, an ideal lens implant would be one which behaves like the young natural lens in your eye. This would have the ability to focus on distant and near tasks, negating the requirement for glasses. This type of lens implant is called an Accommodating lens implant. Accommodating lens implants are available, although current technology does not have a solution which provides enough focusing power to allow absolutely sharp focus for distance and near.

## Multifocal intraocular lenses

When implanted in the eye, a multifocal lens does not provide a single point of focus, but points for focus for both distance and near at the same time. This means that the brain needs to learn to automatically select the focus that is appropriate for the visual task required. As a result the brain also needs to ignore the other background image which is also present. Patients achieving success with multifocal lenses go through a learning period to become accustomed to this process. Since the image through a multifocal lens is split into distance and near sections, the quality of the image is not as high as a simple monofocal lens. There is also the possibility of fine haloes around lights, as a result of the optics of the system.

Patients who are happy with multifocal lenses, understand these mild shortcomings in the optics using this technology, and accept them when considering the advantages and convenience of spectacle independence, but some patients may not choose this option if they are likely to be frequently inconvenienced by symptoms of haloes around lights such as when driving at night.

## Premium monofocal intraocular lenses

Premium monofocal lenses behave as for Standard Monofocal lenses in terms of the side effect profile. That is, they are not more likely to produce glare and haloes around lights than a standard lens. However they do have some function to be able to improve upon not only distance vision, but can sometimes improve intermediate vision tasks such as reading large print, tablets and phone devices. However for small print reading it is safest to assume that reading spectacles will be required.

## Monovision and Mini-monovision

Monovision is a situation where one eye is set for distance and one eye set for near. In some patients this can allow for spectacle independence. This is particularly the case if a person were born with this setup naturally. However, for many people, monovision is not as well tolerated, and can cause visual discomfort and headaches.

The closer the focus between the two eyes are set, the more likely that this will not lead to discomfort. In mini-monovision, a smaller focal difference is aimed between the two eyes, and combined with premium monofocal lenses, this can sometimes achieve well tolerated distance / intermediate and sometimes near vision.

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