

# Our Comprehensive Guide to Intraocular Lenses

If you have been diagnosed with cataracts or are considering Refractive Lens Exchange (RLE) to correct your vision, you will soon face a significant decision: choosing an intraocular lens (IOL).

An IOL is an artificial lens implanted inside the eye to replace the eye's natural lens. While the surgery itself is straightforward, the technology behind these lenses has evolved rapidly. Today, there is a wide array of options designed to suit different lifestyles, visual needs, and budgets.

Our guide breaks down the different types of IOLs available in the UK, how they work, and what they mean for your vision.

## 1. Monofocal Lenses: The Standard Option

Monofocal lenses are the most widely used IOLs worldwide and are the standard option provided by the NHS for cataract surgery.

### How They Work

A monofocal lens has a single point of focus. In most cases, the surgeon will calculate the lens power to give you clear **distance vision**.

### The Patient Experience

- **Distance:** You should be able to drive, watch TV, and recognise faces across the street without glasses (assuming you do not have significant astigmatism).
- **Near & Intermediate:** Because the lens is set for distance, you will almost certainly need reading glasses for close work (reading a menu, sewing) and intermediate tasks (using a computer).

### Pros and Cons

- **Pros:** excellent image quality; very low risk of glare or halos around lights
- **Cons:** limited range of vision; dependence on spectacles for near and intermediate tasks.

## Monovision

Monovision is a technique where the dominant eye is corrected for distance, and the non-dominant eye is corrected for near (between -1.25 and -1.50 DS). The brain learns to blends these images together. It requires a period of adaptation and is not suitable for everyone. The surgeon may use either monofocal or monofocal plus lenses with this technique.

## Micro-monovision

Micro-monovision is like monovision except that the dominant eye is corrected for distance, and the non-dominant eye is corrected for intermediate/near (between  $-0.50$  and  $-0.75$ DS). The technique provides improved vision across a range of distances with less imbalance than traditional monovision. However, glasses may still be needed to read small print or reading in dim light. The surgeon may use either monofocal or monofocal plus lenses with this technique.

## 2. Toric Lenses: Correcting Astigmatism

Astigmatism is a common condition where the cornea (the front surface of the eye) is shaped more like a rugby ball than a football, causing blurred vision at all distances.

### How They Work

Standard IOLs are spherical (uniform). Toric IOLs have specific powers in different meridians of the lens to counteract the astigmatism of the cornea.

### Availability

- **NHS:** Availability varies by trust. Some NHS trusts offer toric lenses for patients with high levels of astigmatism, while others do not.
- **Private:** Widely available and standard practice for anyone with astigmatism.

## 3. Enhanced Monofocal IOLs (Monofocal Plus)

These lenses provide superior intermediate vision compared to standard monofocal lenses along with excellent distance vision.

### How They Work

These lenses modify the curvature of the optic to slightly extend the depth of focus.

### The Patient Experience

You benefit from the high-quality distance vision of a standard monofocal, but with improved **intermediate vision**. You might be able to see your car dashboard or navigate a supermarket aisle more easily, though reading glasses will still be required for small print.

## 4. Multifocal IOLs

Multifocal lenses are designed to reduce or eliminate the need for glasses entirely. They are generally only available privately.

## How They Work

These lenses use sophisticated optics (often concentric rings etched into the lens surface) to split incoming light into multiple focal points. This allows the eye to focus on objects at different distances simultaneously.

## Types of Multifocals

- **Bifocal:** Two focal points (usually distance and near). These are less common now as intermediate vision (computers) is often sacrificed.
- **Trifocal:** They provide three distinct focal points: distance (driving), intermediate (computer screens), and near (reading).

## The Trade-off: Dysphotopsia

Because these lenses split light, less light reaches the retina for any single image. This can cause **dysphotopsia**—visual phenomena such as:

- **Halos:** Rings of light around streetlamps or car headlights at night.
- **Glare:** Starburst patterns around bright lights.
- **Contrast Loss:** A slight reduction in the sharpness of vision in dim lighting.

Most patients adapt to these effects within a few months (a process called *neuroadaptation*), but for a small percentage of people, they can remain bothersome.

## 5. EDOF (Extended Depth of Focus) and EDOF Plus IOLs

EDOF lenses are a modern alternative to multifocals, designed to minimise the side effects of halos and glare.

## How They Work

Instead of splitting light into distinct focal points (like a trifocal), EDOF lenses create a single, elongated focal point.

## The Patient Experience

- **Vision:** Excellent distance and intermediate vision (perfect for computer work and dashboard viewing).
- **Near Vision:** functional near vision, but less powerful than a trifocal. You may still need glasses for very small print or reading in dim light.
- **Side Effects:** Significantly fewer halos and glare compared to trifocals, making them a superior choice.

**EDOF Plus lenses** are premium next generation EDOF lenses that provide enhanced near vision giving total spectacle independence in most patients.

### **Which Lens is Right for You?**

The choice of lens depends on several factors including lifestyle and eye health.

If you have other eye conditions such as **macular degeneration** or severe **dry eye**, a surgeon may advise against Multifocal or EDOF lenses as they can compromise contrast sensitivity. In these cases, a monofocal or monofocal plus lens is usually a better option.

Your ophthalmic surgeon will recommend the most suitable lens option for you based on your vision requirements and their clinical findings.