



Premium intraocular lenses



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This information leaflet aims to explain the benefits of premium lenses used to replace the native lens of the eye, which, when cloudy, is known as a cataract. When a cataract is removed from the eye, a new lens (intraocular lens, IOL) is typically placed within the eye in order to allow clear vision. One of the benefits of private cataract surgery is the ability to choose what kind of lens is implanted; only standard lenses are available within the NHS setting.

A wide range of lenses can be placed within the eye, although typically the measurements that are taken of your eye prior to surgery guide the placement of a lens of the correct power in order to achieve the appropriate vision desired in your eye after surgery. Most people choose to have a lens placed in the eye that typically allows them clear distance vision without glasses, but, with the placement of a 'standard' IOL, patients would almost certainly require reading glasses for close work. With modern laser eye measuring techniques, the overwhelming majority of patients achieve their 'refractive' goal (i.e. the desired spectacle prescription, if any, after surgery).

There are, however, several kinds of premium intraocular lenses (IOLs), which may be suitable for you, which can be used to reduce your dependence on glasses after surgery:

- Toric' IOLs, which allow the correction of pre-existing astigmatism.
- 'Multifocal' IOLs are similar in concept to bifocal glasses, except that the lens is within the eye; the goal of these lenses is to allow the ability to see both distance (e.g. driving) and near (e.g. reading) without glasses. Lenses are available in both bifocal (distance and near) and trifocal (distance, intermediate and near) designs.
- 'Toric multifocal' IOLs combine the advantages of both these types of lenses.

- 'Extended depth of focus' lens, e.g. the Symphony lens
- 'Accommodating' lenses.

Toric lenses

When most people think of an eye's shape, they think of round structure, like a football. In truth, most eyes are more rugby ball-shaped, with the eye being a little squashed in one direction. This irregularity is known as astigmatism and is easily corrected with glasses, but, if marked, a patient's vision without glasses will be quite poor.

A toric IOL is a bespoke lens placed inside an eye to correct a patient's astigmatism, at the same time reducing the patient's short- or long-sightedness. After surgery, the chance of needing glasses for distance is greatly reduced, although without the simultaneous placement of a multifocal lens ('toric multifocal'), patients should still expect to need reading glasses. Cataract surgery in patients with marked astigmatism using standard, non-toric IOLs does typically lead to improvements in vision, but patients should not expect that their final distance or near vision will be perfect without glasses. It is not always possible to use a toric lens, even if an individual has significant astigmatism; reasons include inconsistent scan data, poor corneal surfaces (e.g. very dry), irregular astigmatism and small pupils, which preclude accurate placement of the lenses.

Multifocal lenses

Multifocal lenses are specially designed to create (at least) two images at the same time, one of which is in focus for near and one for distance. The individual's brain decides which image will be 'used', depending on what is being looked at. With such lenses, about 85% of people achieve day-to-day spectacle independence, meaning that typically they can both drive and read, e.g. a restaurant menu,

without glasses. For more prolonged reading, however, many patients still choose to wear reading glasses.

As multifocal lenses split the light entering the eye into at least two images, there is by definition a compromise in the quality of vision achieved. Although around 85-90% of patients are spectacle-independent after surgery, the distance & near vision achieved is unlikely to be as impressive as if a standard, monofocal lens (with reading glasses) had been used instead, the upside of course being the lack of a need for near spectacles.

Multifocal lenses are probably unsuitable for patients with optically demanding hobbies & occupations, such as astronomers or photographers, although the golfer Gary Player has notably done very well after such surgery! In the dark – and occasionally even the light – some patients do complain of haloes / glare around lights; multifocal lenses are thus unsuitable for occupational night drivers. In addition, people with relatively low degrees of short-sightedness are not great candidates for these lenses, as they are used to an excellent quality of unaided near vision. Although it can be difficult to determine in advance who may be dissatisfied with the quality of vision achieved with multifocal lenses, dissatisfaction may be commoner in people with 'type A' personalities, as well as those with good unaided distance vision already.

Toric multifocal lenses

These lenses combine the benefits of both toric and multifocal lenses, i.e. simultaneously improving astigmatism and aiming to achieve spectacle-independence for distance and near.

The premium lenses discussed above are not necessarily better than the monofocal lenses used in 'standard' lens RLE or cataract surgery. Your surgeon will discuss with you in detail which lens choice we believe will be the best choice for you. All premium lenses require

accurate placement within the capsular bag of the eye and – unlike standard lenses – there is the possibility of: (i) migration of the lens in the postoperative period, which may potentially require a repositioning procedure (approximately 1:100 patients, included in your surgical package); (ii) late migration of the lens may occur, with potential reduction in vision; (iii) not being able to use a premium lens as planned during a procedure, in the unlikely event of a surgical complication making the placement of such a lens unsafe. In this latter situation, patients must be aware that there is a chance of not being able to have their vision corrected to the extent that they had hoped, for example, no reading vision without glasses and / or a residual requirement for spectacles for distance (e.g. if astigmatism cannot be corrected).

'What other lens techniques are used in cataract surgery?

An alternative approach for people, who wish for reduced reliance on spectacles, is a technique known as 'blended monovision' (also known as 'micro-monovision'). In this technique, multifocal lenses are typically not used, but one eye (usually the dominant eye) undergoes lens replacement surgery aiming to achieve good distance vision, while the other eye is set for closer distances. While some patients (typically long term contact lens-wearers) can tolerate a sufficient difference between the two eyes to allow a true reading eye and a distance eye (known as 'true monovision'), most cannot. However, aiming for a more subtle difference in prescription between the two eyes (ideally around 1.25 Dioptres) allows greater functionality around the house, and is often sufficient to allow supermarket shopping without glasses, seeing the dashboard clearly and also some reading, all without the disadvantages of multifocal lenses.

For blended monovision to work well, it is imperative to have a good result from first eye – typically the dominant, or distant eye – surgery. If the ‘refractive’ outcome from surgery is not as good as planned (see below, risks), then your surgeon may recommend aiming for a distance result in the second eye too. This naturally may increase the chance of you needing reading, or intermediate vision, spectacles.

It is not uncommon for patients to find that they need several weeks to adapt to the results of this technique, which can occasionally cause minor headaches for a short period of time. It would be unusual for unpleasant symptoms to persist in the longer term and most patients adapt very quickly indeed, often being able to read larger print happily within 36 hours of surgery.

Costs

The costs of toric and multifocal lenses are significantly greater than for standard intraocular lenses. In cataract surgery, most of the larger insurance companies do not fund the extra cost of these lenses, the cost being passed directly to the patient as an ‘excess’. It is worth considering, however, the potential likely savings made in comparison with, for example, the costs of varifocal glasses in the future. There is no extra charge for the blended monovision technique, as standard lenses are used, unless you have significant amounts of astigmatism, in which case toric lenses will be suggested, which may be used to obtain best results in the blended vision technique.

The cost quoted to you at your consultation includes the cost of the procedure, the surgeon’s fee, hospital costs, your new lens and all immediate aftercare and consultations required pertaining to the procedure itself (including lens rotation or repositioning procedures, placement of a piggyback lens within the eye, but specifically excluding YAG

laser treatment – see below – which, if required, is typically required months or years later). Bear in mind that if one eye, for example, requires a toric multifocal lens, and the other eye a standard multifocal, there will be a considerable difference in cost between eyes.

Obviously, if another condition is detected during your consultations, for example an eyelid malposition or glaucoma, ongoing management of these conditions would be excluded from your package and this would be specifically explained to you at the time.

Your initial assessment consultation and biometry (eye measurements) are charged separately from - and in addition to - any procedure fees.

Risks

Although your eyes will be measured using a modern, laser-scanning technique, there is no absolute guarantee that the refractive outcome (spectacle prescription, if any, following surgery) will be perfect due to: the empirical nature of the formulae used to estimate the lens power; and the variation between individual patients’ eyes in their response to surgery (e.g. lens position within the eye, and the astigmatic effect of incisions).

This means that, for distance, approximately 90% achieve a refractive outcome within 1 Dioptre of their goal, and approximately 70-75% within 0.5 Dioptre. In other words, despite using modern laser-scanning techniques for measuring eyes, there is a small, but significant chance of being spectacle-dependent following surgery, for both distance and near. The chance of patients having a significant postoperative refractive error (need for a small spectacle correction, or a “refractive surprise”) is typically greater for patients whose eyes are either very long- or short- sighted to start with. Subsequent corrective refractive surgery may be possible for some patients at a later date. This may

include the placement of another 'piggyback' lens in the eye, in front of the new lens, or subsequent laser eye surgery on the front of the cornea of the eye.

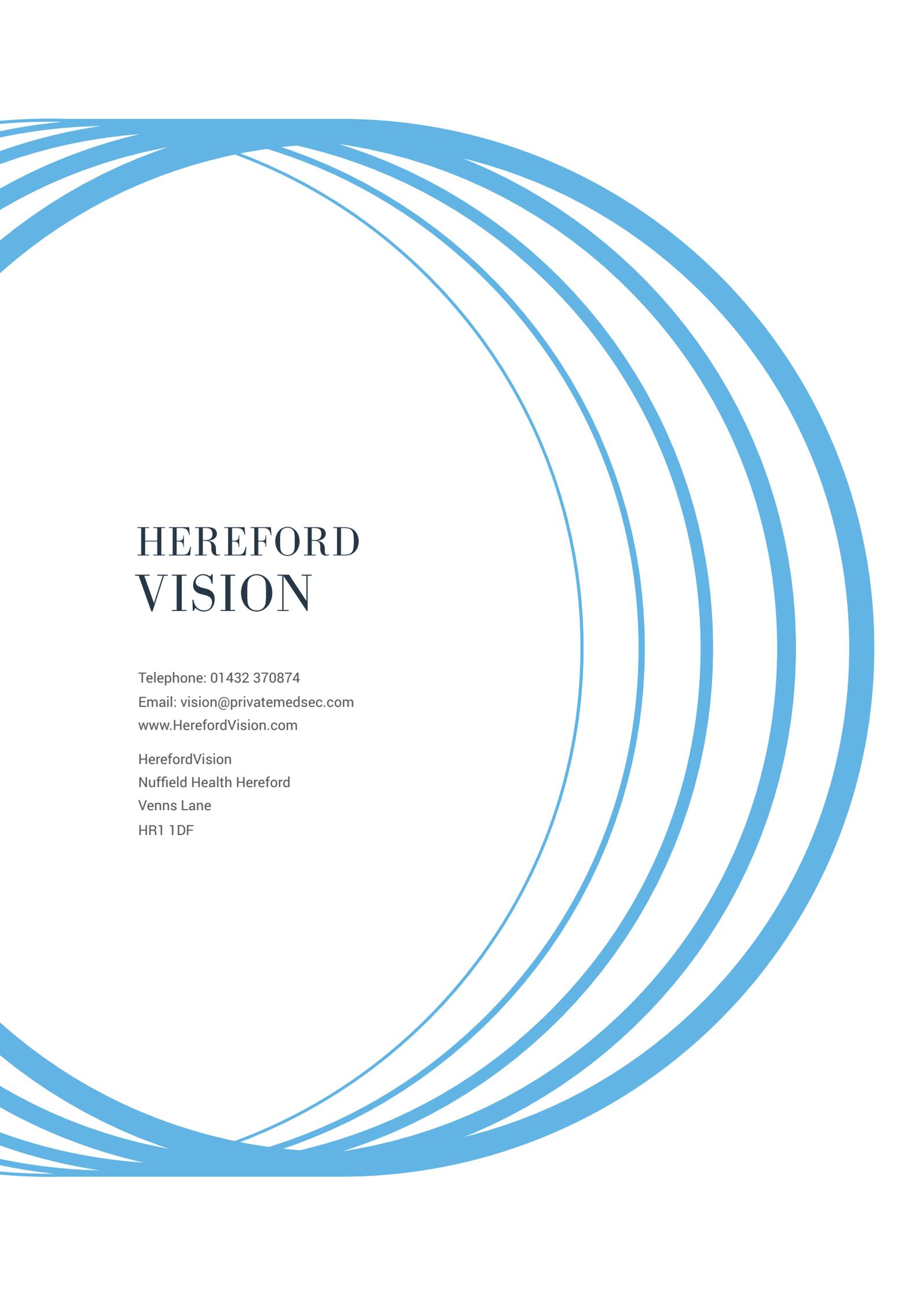
In the unlikely event of a surgical complication, it is possible that a premium lens would not be an appropriate choice of lens to implant, the decision being taken during surgery. It is important to understand that, in this eventuality, it may be necessary to use a standard intraocular lens (i.e. not a toric or multifocal lens). For some such patients, subsequent surgery to achieve spectacle-independence may be possible. In the rare event of a non-premium lens being used, the cost of the surgery will naturally be adjusted downwards to reflect the lower cost of the lens implanted.

All the risks discussed in the standard cataract surgery leaflet also still apply for patients undergoing implantation of a premium lens; these have not been repeated in this additional leaflet for brevity *but it is important that you still read the standard cataract surgery leaflet.*

In your case, I would recommend:

- ▶ standard intraocular lenses
- ▶ toric intraocular lenses
- ▶ multifocal intraocular lenses
- ▶ blended monovision technique
- ▶ true monovision
- ▶ toric multifocal intraocular lenses

It is important that you contact the HerefordVision team well in advance of surgery if you wish to be considered for an alternative type of lens.



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