

Astigmatism now tackled by intraocular lenses



Dr Philip House, Ophthalmologist

Astigmatism is relatively common and different options are available when correction is required. New implantable lens technology now means that patients undergoing cataract surgery can also have their astigmatism corrected.

In optics, the term 'stigma' refers to the way a lens can focus light to a small point. If the focus is not sharp (i.e. the point of focus is missing) you have 'a-stigmatism'. Explaining this to patients can be difficult. A useful analogy is to compare the shape of the normal cornea to the back surface of a soup spoon and the astigmatic cornea to the back surface of a table spoon. Similarly, a basketball cut in half compared to an Aussie rules football cut in half along its long axis may appeal more to the men! (See Figure 1.)

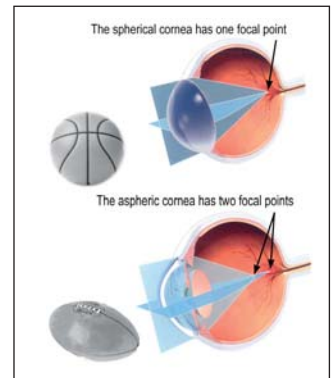


Figure 1.

Correction of astigmatism

A small amount of astigmatism is common and causes no problem. Higher astigmatism significantly degrades the visual image (see Figure 2).

When correction is needed to achieve better acuity this can be done with glasses, contact lenses and more recently with refractive surgery.

Correction also possible during lens replacement

In the days of large corneal incisions for extra-capsular lens replacements in cataract patients, astigmatism was actually induced by the surgery. Following the introduction of phaco-emulsification, extracapsular lens replacement using sub-3.5 mm incisions, minimal operatively-induced astigmatism has been the norm. For those with preexisting astigmatism undergoing cataract surgery, corneal incisions to improve corneal curvature have been used but produce relatively unpredictable results.

However, the introduction of astigmatic intra-ocular lenses that correct for astigmatic corneas have provided a remedy. Recent FDA studies for one of these lenses showed >90% spectacle independence for distance vision with the astigmatic lens, versus 50% for the conventional non-astigmatic lens (in patients implanted bilaterally with a refraction aimed at distance vision).

The operative technique required is very similar to routine cataract surgery but at the time of lens insertion care must be taken to align the lens in the correct axis (see Figure 3.). Appropriate marks are made on the cornea pre-operatively and used to align the axis marker which is on the lens. Spontaneous rotational movement after lens insertion is very limited. This is an important consideration as the ability of the lens to correct astigmatism diminishes by about 3% per degree of mal-orientation. Cataract surgery patients certainly see the point with this new lens technology

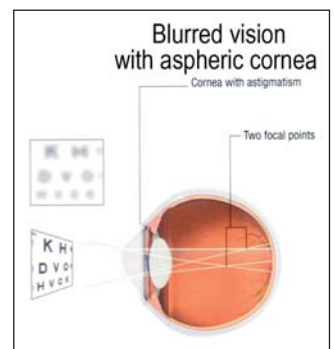


Figure 2.

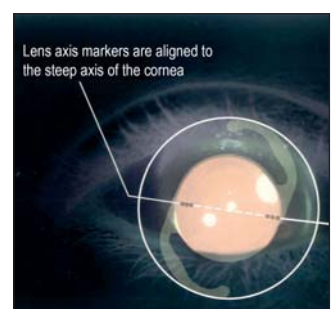


Figure 3.

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