

Lens Implants: Intra-Ocular and Clear Lens Replacement

A substantial portion of the lens implants which are performed today are in fact a new technology based on "cataract" surgery, a well proven surgical procedure. Every year in the world today millions of people undergo cataract surgery, in which the natural lens of the eye is replaced with an artificial lens. Intra-ocular lens implant surgery uses the same and similar surgical techniques which are required for cataract surgery.

Different types of lens implant Synthetic lenses are either implanted into the eye in addition to the eye's natural lens, or they replace the eye's natural lenses. Lens implants, which are frequently used today, can be categorised into two main sections namely:

- Those where the natural lens of the eye is retained. This is very often referred to as a "PHAKIC" contact lens implant or "Implantable Contact Lenses", also known as 'ICL's'.
- Those where the natural lens of the eye is replaced.

Lens implant procedures where the natural lens of the eye is retained

PHAKIC (ICL) Lens Implants

A Phakic ICL is an Intra-Ocular Contact Lens, or contact lens implant, that is placed inside the eye in someone who still has their natural lens (i.e. they are 'phakic'). For severely short-sighted people LASIK may not be suitable. These are the people most suited to Phakic ICL's. Another key difference between LASIK and Phakic ICL's is that laser surgery is permanent and cannot be reversed, whereas it is possible to remove or to replace a Phakic ICL.

Phakic ICL Lens implants are options for younger and middle aged patients with severe myopia because the lenses of their eyes are still elastic and have not yet lost their ability to accommodate (they are able to see at close distances without the need for reading glasses). With the aid of ICL's these patients are given the opportunity to reduce their dependency on spectacles or contact lenses while conserving the ability of their natural lenses to accommodate for close-up vision.

It is usually possible to exchange the lens implant for one of a different power if need be. Phakic ICL's may be better in patients who have dry eyes as this

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can be made worse by LASIK.

Phakic ICL's are typically used when surgical procedures to the cornea, such as Lasik, cannot be performed or are at their limit. This is very often the case when the cornea is too thin.

The disadvantage of phakic contact lens implant surgery is that it is intra-ocular (like a cataract operation). A remote chance that surgery may introduce an infection into the eye does exist. Other surgery related complications are possible. In some patients problems with night vision and glare have been reported. Less glare and halo's are experienced when compared to the glare often associated with LASIK.

Bifocal Phakic Lens Implant

Bifocal phakic lens implants are available. This type of contact lens implant is inevitably a compromise between near and distance vision. This may be a reasonable option for someone who is very keen to be rid of spectacles and who can accept a slightly reduced quality of near and distance vision.

The ARTISAN Lens

The most widely-used phakic ICL in Europe is the Artisan (Ophtec) iris-fixated ICL. It is used to correct hyperopia, astigmatism as well as extremely high degrees of myopia (up to -23.5 dioptres). This type of contact lens implant is placed permanently into the eye with the aim to reduce or eliminate the use of glasses or contact lenses.

Posterior Chamber Phakic ICLs

Posterior chamber Phakic ICLs are placed just in front of the natural lens, behind the iris. The Staar lens, which is manufactured in the United States, is the most well know posterior chamber phakic ICL.

Lens implant where the natural lens of the eye is replaced.

Clear Lens Replacement Surgery also referred to as Refractive Lens Replacement Surgery (RLR)

For RLR implant lens surgery the eye's natural lens is first removed with the aid of ultrasound, and then it is replaced with a synthetic lens. The highly myopic patient's choices for surgical refractive correction are - implantation of a phakic ICL, as discussed above, or the replacement of the patient's natural

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lens with a synthetic lens.

RLR Surgery utilising a FIXED-FOCUS Lens Implant

This procedure uses a fixed-focus lens implant rather than a multi-focal lens implant. Patients suitable for this procedure include those with specific refractive disorders, such as high myopia. Often these patients are outside the treatment range for LASIK and yet a multi-focal lens implant may not be appropriate.

Fixed focus RLR is predominantly considered for patients who are more than 40 years of age and who do not object to the use of reading glasses. RLR is also used when an age related cataract already exists, which sooner or later would lead to an exchange of the body's own lens with a synthetic lens.

RLR Surgery utilising a MULTI-FOCAL Lens Implant (PRELEX)

PRELEX stands for PREsbyopic Lens Exchange, these days referred to as the surgical intervention which restores vision without glasses for hyperopic and presbyopic patients.

As we age our natural lens becomes less flexible and loses its ability to accommodate. As a result of this we are not able to see near objects clearly and require reading glasses. This condition cannot be corrected with the aid of laser surgery such as LASIK. Patients who have had laser vision correction will in later years develop presbyopia. This can be corrected with the aid of PRELEX implant lens surgery.

PRELEX is an intra-ocular lens replacement procedure in which the natural lens, is replaced with a multi-focal intra-ocular lens implant. The procedure is similar to a cataract operation and has the added advantage that the implanted lens will never develop a cataract. Traditionally replacement lens implants were all fixed-focus which gave clear distance vision but required the use of reading glasses in most cases. This procedure has on a regular basis been performed since the mid 1990's mainly on patients with presbyopia. As a result of this presbyopic patients are now able to regain better vision with reduced or no dependency on glasses.

RLR Surgery utilising the Accommodative Lens Implant

The accommodative lens which is manufactured by Human Optics AG is the latest lens developed for RLR implant lens surgery. A healthy eye is able to change its shape in order to accommodate clear vision. The ability to "accommodate" deteriorates as we get older. Most artificial lenses, which are

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used for lens replacement surgery are rigid and cannot change their shape like the natural lens. As a result of this patients generally have to wear glasses after cataract or lens implant surgery. This disadvantage is overcome by means of the accommodative lens, which is able to maintain the accommodation on an artificial basis. This crystalline lens enables the patient to focus on far as well as near images.

The accommodative lens has been successfully implanted since the middle of year 2000. The accommodative lens is known to give excellent results with good far, near and intermediate vision, generally without the use of glasses.

The following information is provided by Eye Surgery UK, a network of dedicated ophthalmic service providers, delivering a superior eye surgery service throughout the United Kingdom.

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