



What you need to know about cataract treatment



We make it visible.



When eyesight starts to diminish

Effective cataract treatment

Good vision greatly contributes to our personal well-being and to our ability to do the things we enjoy. However, as we grow older, our eyesight naturally starts to diminish. Cataracts are a common cause for this gradual deterioration. Left untreated, a cataract can increasingly begin to restrict daily activities and the overall quality of life. What's more, cataracts are frequently accompanied by other common eye conditions such as nearsightedness, farsightedness, astigmatism and presbyopia.

Most types of vision impairment are easily corrected with eyeglasses or contact lenses. A cataract, however, cannot be treated with these conventional means, or even with medication. Surgical replacement of the eye's clouded natural lens with an artificial lens (medically speaking: intraocular lens, or IOL) is the only effective method for removing a cataract. In fact, cataract surgery is the most frequently performed surgical procedure and highly successful in restoring vision.

In this brochure, you will find useful information on cataract treatment and the various types of intraocular lenses available today, which may help you understand your options and facilitate discussions with your eye doctor.

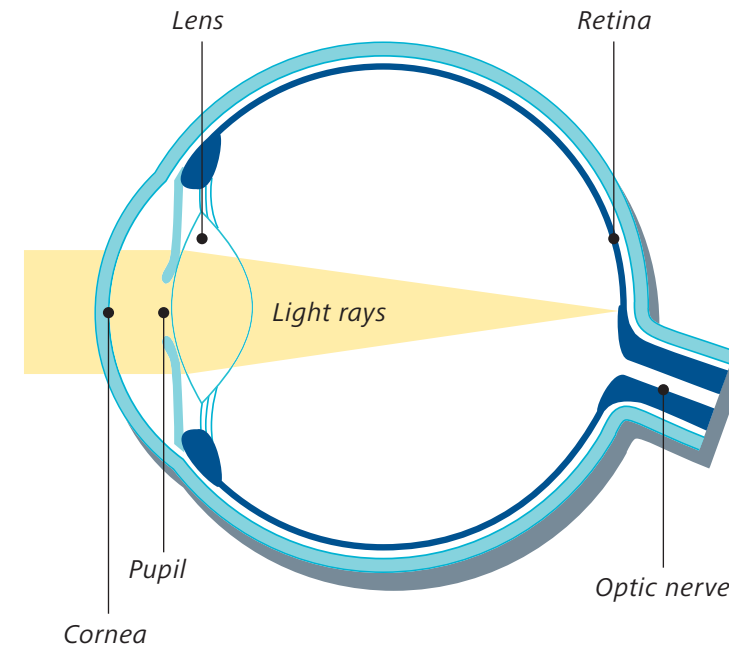
How the eye works

Understanding vision

The human eye is an amazing organ. Each one is unique. The quality of our individual vision is determined by the size and shape of our eyes, which can greatly vary.

With a healthy eye, light rays pass through the cornea at the front of the eye, and are focused by the lens inside the eye directly onto the layer of tissue at the back of the eye called the retina. The formed image is then sent to the brain via the optic nerve.

When the eye's dimensions are not symmetrical, or its shape is somehow irregular, this can lead to a vision disorder. These so-called refractive errors, explained on the next page, are the most common types of eye conditions and can affect individuals of all ages.



Normal vision

Light rays pass unhindered through the transparent lens and are focused directly onto the retina, forming a clear image.

Common forms of vision disorders

Refractive errors

Refraction refers to the bending of light rays in the eye. Refractive errors such as nearsightedness, farsightedness and astigmatism occur when the cornea's optical power and the length of the eye are not aligned, thereby preventing the light rays from focusing directly onto the retina.

Nearsightedness (Myopia)

People with "near-sighted" vision (myopia) are able to clearly focus on objects up close, but not on those in the distance.

Farsightedness (Hyperopia)

Conversely, people affected by "far-sighted" vision (hyperopia) can clearly focus on objects in the distance, but have difficulty clearly seeing those that are up close.

Astigmatism

An astigmatism occurs when the cornea has an irregular (slightly oval) shape, causing the light rays to focus on more than one point. As a result, vision is blurry or distorted.



Near-sighted vision simulation



Far-sighted vision simulation



Astigmatic vision simulation

Age-related vision changes

Cataract and presbyopia

A **cataract** is a gradual clouding of the natural lens of the eye. This is natural part of the aging process, sooner or later affecting most of us. In some cases, such as diabetes or eye trauma, cataracts can also affect younger people.

What is a cataract?

A cataract occurs when the eye’s crystalline lens becomes increasingly clouded, usually due to a change in its protein structure. As the lens becomes thicker and less transparent, it prevents light from clearly passing through it – similar to a foggy window.

Cataracts are often accompanied by other vision disorders. **Presbyopia**, another common age-related eye condition, often causes vision deterioration years before a cataract develops.

What is presbyopia?

After the age of 40, the lens starts to become less flexible, causing a reduced capability to adjust and focus on objects at various distances. Objects up close, in particular, become increasingly difficult to see clearly.

Typical signs of cataract

- Gradual deterioration in vision quality
- Hazy or cloudy vision
- Faded color and contrast perception
- Increased sensitivity to bright light
- Frequent changes in eyeglass prescription



Normal vision

Vision with a cataract

Typical signs of presbyopia

- The need for reading or progressive glasses
- Difficulty with near range tasks such as reading
- Objects must be held farther away to see them clearly

Cataract treatment

A proven procedure

Cataracts cannot be delayed or prevented, nor treated with medication. The cloudy natural lens needs to be removed surgically. Cataract surgery has proven to be a safe and effective treatment method for many years, as clinical results show. In fact, it is the most widely performed surgical procedure in the world today.

During cataract surgery, the cloudy lens is broken down and carefully removed through a small incision in the cornea of approximately 2 mm. It is replaced by a tiny artificial lens, called an intraocular lens or IOL, which is implanted through the same incision. The procedure is performed under local anesthesia on an outpatient basis. The surgical procedure generally takes 15 to 30 minutes. Also, the surgery generally does not require sutures, which facilitates a quicker recovery.

Typical steps of cataract treatment

Surgery preparation

Eye measurements to calculate the correct intraocular lens power

Outpatient surgery

Same-day procedure with local anesthetic such as eye drops

Follow-up visits

First day after surgery, then for approx. a month, as needed

Regular exams

Periodic check-ups by your eye doctor

Intraocular lenses (IOLs)

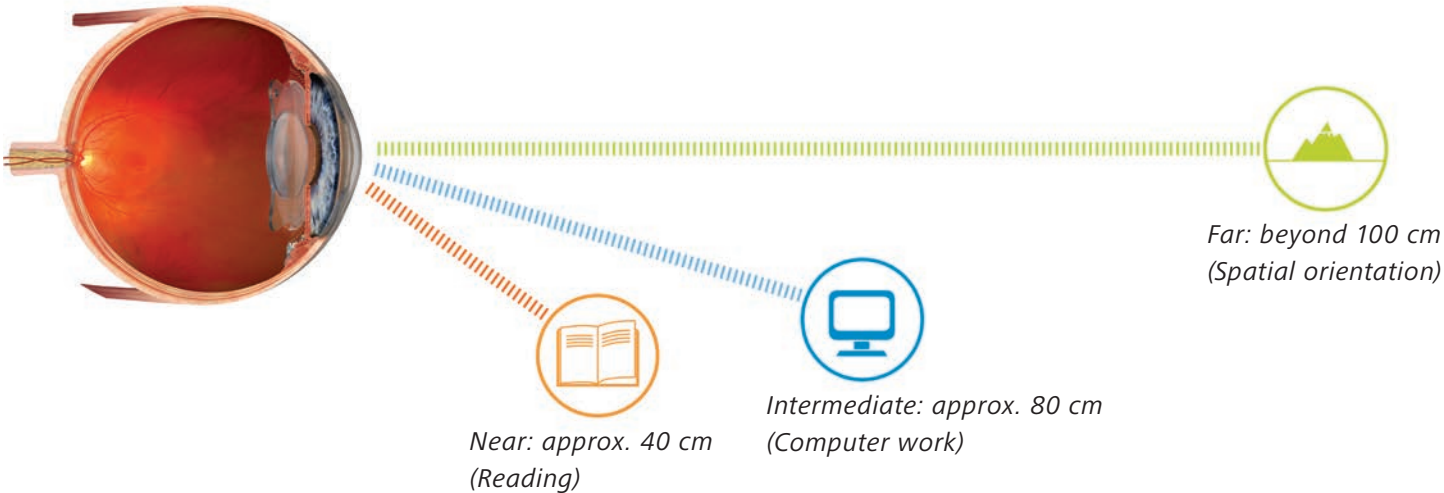
Modern cataract treatment technology

An intraocular lens represents highly innovative technology – both in terms of its corrective power and the vision quality it can provide. In addition to treating cataracts, certain types of IOLs also enable correction of other vision disorders such as presbyopia. Modern intraocular lenses simulate the refractive properties of the natural lens, and can enable good vision at one, two or three distances.



Actual size of an IOL compared to an almond

Commonly made of a soft, synthetic and biocompatible material, a typical intraocular lens measures approximately 11 mm in diameter. The thickness of the optic can vary, depending on the lens power. The corrective power of the lens is individually calculated for each eye and may differ for each eye.



Various vision distances (near, intermediate, far) can be achieved with modern intraocular lenses

Intraocular lenses with added benefits

Advanced cataract treatment options

Different types of intraocular lenses are available today to accommodate various vision needs of cataract patients. Lenses are classified by the number of focal points and can be either monofocal or multifocal (bifocal or trifocal).

Main types of intraocular lenses

Monofocal lenses

with one focal point for far or near vision

Bifocal lenses

with two focal points for near and far vision

Trifocal lenses

with three focal points for near, intermediate and far vision

Modern intraocular lenses can also have additional functions, enabling them to better match the unique requirements of each patient.

Typical types of intraocular lenses with additional functions

Aspheric lenses

for better contrast vision

Violet-light filtering lenses

with extended filter function

Toric lenses

for astigmatism correction

Common types of intraocular lenses

Intraocular lenses with one focal point

Monofocal intraocular lenses

The most common type of intraocular lens has a monofocal optic with a single corrective power (focal point). Monofocal lenses are designed to provide clear vision for one distance, usually far, which is important for tasks such as driving. However, patients with monofocal IOLs may continue to need eyeglasses for activities at other distances, for example, reading.



Vision simulation with a monofocal lens: clear vision at distance

Additional vision distance

Intraocular lenses with two focal points

Bifocal intraocular lenses

Similar to bifocal eyeglasses, bifocal intraocular lenses have two focal points to provide clear vision for both distance and up close. Patients treated with bifocal IOLs may need to wear eyeglasses for certain intermediate-range tasks (approx. 80 cm) such as computer work.



Vision simulation with a bifocal lens: clear near and distance vision

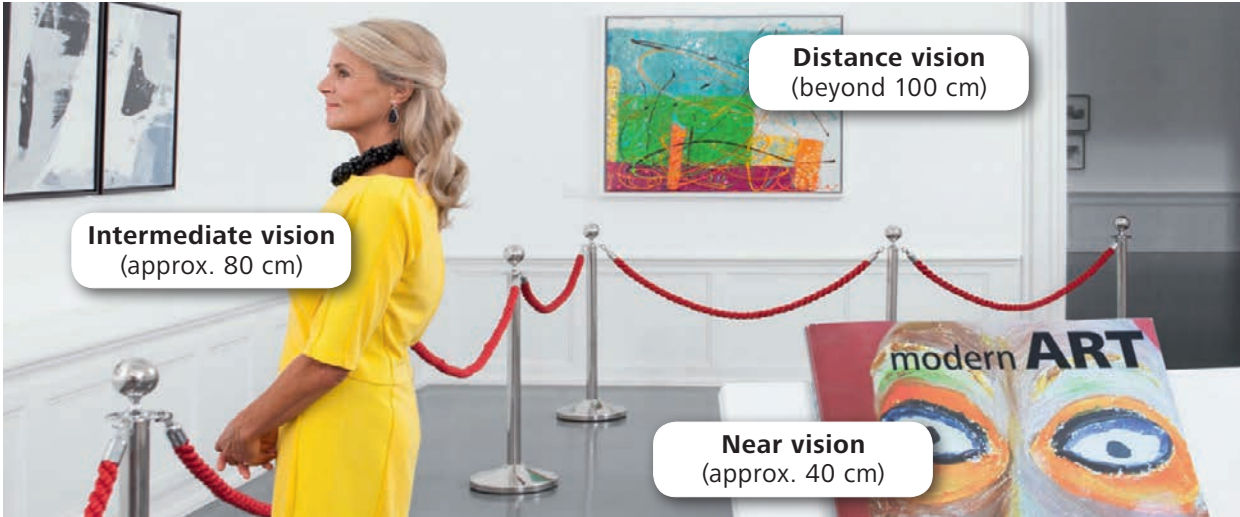
Designed for clear vision across all distances

Intraocular lenses with three focal points

Trifocal intraocular lenses

The most advanced intraocular lenses today, trifocal IOLs, have been used to successfully treat cataracts for several years. These lenses are designed to project multiple images onto the retina, which the brain combines into one sharp picture, allowing patients to see objects clearly at various distances – similar to progressive eyeglass lenses.

Trifocal intraocular lenses are designed to enable not only clear far vision and a comfortable reading distance. This type of IOL provides in addition good intermediate vision, which is essential for performing daily activities such as cooking or computer work. As a result, many patients with trifocal lenses no longer need to wear glasses.



Vision simulation with a trifocal lens: clear near, intermediate and distance vision

Intraocular lenses with added functions

For individual vision needs

Advanced intraocular lenses are available to meet patients’ individual vision requirements. Depending on the design, these intraocular lenses offer further benefits, for example, improved contrast perception.

Aspheric intraocular lenses

Due to their aspheric (i.e. not round) optic shape, these lenses enable the light rays to be optimally focused onto the retina which can help to improve vision quality and contrast sharpness, particularly in poor lighting conditions (at dusk or at night).

Blue-/violet-light filtering intraocular lenses

These special lenses incorporate an additional light filter that absorbs harmful blue and violet rays of the light spectrum, and may help to protect the sensitive nerve cells of the retina – similar to a pair of sunglasses.

Toric lenses for astigmatic patients

Intraocular lenses can also help to correct existing vision impairments such as astigmatism. Designed specifically for patients with this condition, toric intraocular lenses provide special vision correction to compensate for an irregularly shaped cornea. Similar to eyeglasses with cylindrical lenses, toric IOLs incorporate cylinders with different corrective powers. These lenses are available with monofocal, bifocal and trifocal optic designs.

Choosing the right lens

Selecting an intraocular lens is a very personal matter. Not only should specific medical pre-requisites be taken into account, but also the individual needs and personal preferences of the patient. Consult with your eye care specialist to help you select the IOL that is best for you.

Cataract treatment

Answers to frequently asked questions

If you are considering cataract treatment, you probably have many questions. Some of the most frequent ones are addressed here. This information is not intended to replace consultation with your eye doctor. Only he or she can evaluate whether cataract treatment and an intraocular lens is suitable for you.

How is cataract surgery typically performed?

Cataract surgery is generally performed on an outpatient basis and takes about 15 to 30 minutes (not including preparation and recovery time). Usually local anesthesia is used. In some cases, general anesthesia may be required. Surgery is performed on only one eye at a time. Typically, after a short observation period, you will be allowed to go home. If you are traveling by car, you should arrange for someone to drive you home.

What care measures are typical after surgery?

You might be told to wear an eye patch or similar protection for a few days after surgery and to avoid rubbing or pressing your eye. Your doctor may also prescribe eye drops or other medication to prevent infection and to control eye pressure.

What activities should I avoid?

Typically, following surgery, doctors may advise you to relax and avoid strenuous activities such as bending over or lifting and to not overexert your eyes, so they have time to recover.

Is the treatment safe?

Cataract surgery is considered to be one of the safest surgical procedures performed today. However, as with all medical treatments, some complications may occur. Your physician will thoroughly discuss the potential risks with you.

Will I experience any visual disturbances after the surgery?

With multifocal intraocular lenses, patients may experience some visual phenomena like glare following surgery, especially in poor lighting conditions, for example, when driving at night. These effects typically diminish in a few weeks as the brain gradually adapts to the intraocular lenses.



How long will it take before I regain full vision?

Patients frequently notice a significant vision improvement immediately following surgery. However, some may also experience blurriness. It can take a few days for the eye to adjust and vision to improve. Bifocal and trifocal intraocular lenses normally require a longer period of adjustment of several weeks or months before vision fully improves.

When will my second eye be treated?

If you have cataracts in both eyes, your doctor will typically schedule the second surgery in the near future. Patients have the best adjustment to bifocal or trifocal intraocular lenses when both eyes are treated.

What follow-up examinations are customary?

Your doctor will usually want to look at your eye within 24 hours after surgery. Additional examinations are typically scheduled over the following weeks to monitor healing until your vision has fully stabilized. Depending on the IOL type, one to four follow-up appointments within the first month following surgery are customary.

Will I need to wear glasses following surgery?

Patients with monofocal and bifocal lenses may need to continue to wear glasses for certain tasks and activities. The majority of those treated with trifocal lenses, on the other hand, may have a good chance of not requiring glasses anymore.

This brochure is only for basic information. It is not to be considered medical advice or a substitute for obtaining your own medical consultation, during which you will be informed also about possible risks and restrictions of cataract surgery.



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