

Refractive Surgery



Perfect image for a moment,
perfect vision for a lifetime



Perfect vision is called **emmetropia**



Emmetropia

This happens when the cornea and the lens in the front of the eye bend or refract the rays of light bouncing off an object precisely on the retina in the back of the eye, creating a sharp image. When the light rays are not focused directly on the retina, we have what is called a refractive error of the eye or ametropia.

Myopia or nearsightedness:



If you are myopic or nearsighted, the focused image falls short of the retina so you cannot see distant objects clearly.

Hyperopia or farsightedness:



When the focused image falls behind the retina, you are farsighted, meaning you cannot see near.

Astigmatism:



When the cornea is elongated rather than spherical, then both near and distant objects appear distorted.

Presbyopia:



This condition usually appears after the age of 40 and is a normal part of aging. The lens of the eye becomes less flexible and loses its ability to focus on near objects.

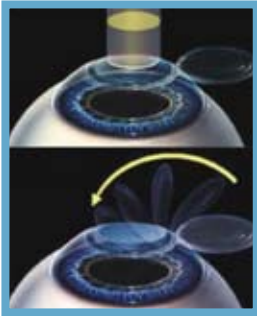
In the last decade, laser eye surgery to correct these refractive errors has become routine and is completely safe. The principle is simple: using a ray of light, the excimer laser, the surgeon alters the curvature of the cornea, allowing the light to focus on the retina. This means perfect eyesight - emmetropia. Laser surgery makes life easier. You can read the newspaper, watch TV, play sports and go to the movies without ever worrying about having your glasses handy or remembering to rinse your contact lenses again.

Common laser eye surgery for refractive errors

The majority of refractive surgery today is either LASIK or PRK. After a pre-operative check, the eye surgeon will decide which is the most suitable method in your specific case. The statistics following up hundreds of thousands of such operations show that both methods produce excellent and permanent results.

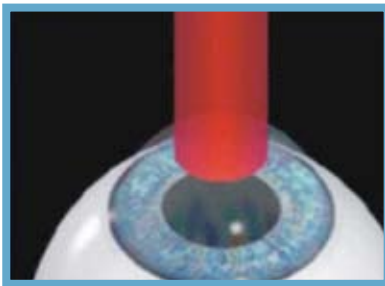
LASIK

This is the most widespread method of laser eye surgery in the world. Surgery is painless, brief and safe.



The laser beam is not applied directly on the surface of the eye but under a thin flap of corneal tissue, which is carved by a special device known as the microkeratome. This thin corneal flap is then folded back over the surface treated by the laser and the procedure allows for a quicker and more comfortable recovery.

Only two drops of anesthetic are required, post-operative results are highly predictable and eye-sight is regained in just a few hours following surgery.



PRK

This is an equally safe and quick method.

In this case the corneal epithelium is removed and the laser is applied to the underlying corneal tissue. Then a protective contact lens is placed on the eye for three-four weeks. Vision is gradually regained. It is highly satisfactory after the first week and very good at the end of the first month.

Other refractive procedures

INTRAOCULAR LENSES (IOLs)

The intraocular lenses that are used in cataract surgery, depending on their refractive power, can correct myopia, hyperopia, presbyopia and astigmatism that existed prior to the operation.

The same method is applied in cases of high refractive errors where there is no cataract and it is called Clear Lens Extraction.



Excimer Laser in Refractive Surgery

An excimer laser is a laser, a powerful and versatile light source, which produces energy in the ultraviolet spectrum. The excimer laser is a type of cool laser, meaning that it does not generate heat, and it can be highly precise, which is critical for operations in which fine detail is required

The excimer laser as applied to eye surgery is an extremely precise device that produces a smooth reshaping of part of the cornea with minimal effect on adjacent tissue.

Our technology

The SCHWIND AMARIS® 750S

The absolute best performance from the leader in technology.

The demands patients are placing on treatment methods and the results attainable in corneal surgery are constantly increasing. Shortest treatment times with perfect results are the prerequisite for any candidate for refractive surgery. The SCHWIND AMARIS® 750S sets a new standard - so patients can feel satisfied that we can do the best for them.



Customized Laser Ablation

ORK CAM (Custom Ablation Manager)

The aspheric ablation profiles of the ORK-CAM ensure an optimized postoperative Q-value, taking energy loss and biomechanics compensation into account at the same time. The ORK-CAM is also used to plan treatments based only on sphere-cylindrical prescription as well as on imported corneal wavefront or ocular wavefront data. Using wavefront optimized profiles lead to an ideal ablation profile and minimized ablation depth.

ORK CAM - Corneal Wavefront

Corneal Wavefront is successfully being used for treatment of "virgin eyes", individual improvement of visual acuity (in case of corneal aberrations), re-treatment of decentred ablations, re-treatment to enlarged optical zones and re-treatment of irregular ablations.

The combination of the future oriented ESIRIS Excimer laser system for Refractive Surgery together with the high resolution corneal topography system Optikon Keratron shows new perspectives of measuring and interpreting the cornea.

With this an individual and true "customized ablation" may be performed with the Schwind Excimer Laser ESIRIS.

The fact is obvious, 80% of all aberrations of the human eye occur in the corneal area and only 20% of aberrations in the lens, vitreous body, and the retina.

ORK CAM - Ocular Wavefront

Reliable data about the aberrations of the complete optical system "eye" are necessary in order to perform "wavefront guided" customized ablations, i.e. individual patient oriented laser ablation. This is the basis for establishing an individual ablation profile which ultimately leads to a successful, individual, visual correction. Highest resolution wavefront measurement data is linked now to the ORK CAM Software for Aberrometry guided "customized ablation".



Frequently asked questions

1. Am I a good candidate for refractive surgery?

You must be at least 18 years old and the degree of your refractive error must be steady for at least a year. There should be no chronic disorders of the retina or cornea or other ophthalmological illnesses or inflammation. If you are a woman, refractive surgery is to be avoided during pregnancy or nursing. The pre-operative check will determine whether you can be subjected to laser treatment in the event that you fulfill all anatomical and optical conditions.

2. Is the operation painful?

The LASIK method is entirely painless. You might feel a slight irritation after the application of the anesthetic drops. After the operation we advise you return home and rest. You should keep your eyes closed and avoid reading or watching television on the first day.

3. When will my vision be restored?

Vision will be slightly blurred after the operation but you will be able to carry out basic daily activities. We advise you return to work after two to five days.

4. When I will be able to return to work?

Depending on the method used to correct your refractive error and the healing process (inherent to every person) you can be back after 2 or 3 days, maximum 5 days.

5. When I will return to my sports activities?

After a week you can have some mild sports activities. Swimming or high risk sports like football, martial arts or wrestling should be avoided the month after the operation. Your ophthalmologist, depending on the method used, is the appropriate person to advise you on this matter.

6. Are there possible complications?

Despite the fact that the techniques for refractive surgery are relatively simple, the surgeon must be experienced in order to make a proper assessment at the pre-operative stage in determining the degree of correction required and selecting the most suitable method. Experience is also a must during the operation itself.

There are possible, though rare, complications such as infections and allergies but when these are handled by an experienced surgeon they are reversible, treated with the appropriate medication and never lead to permanent loss of vision. Another complication, extremely rare (less than 1%) can happen during the flap creation in Lasik but never leads to loss of vision and the operation has to be rescheduled for later on.

In the majority of cases the error is completely corrected. In rare cases, if the eye does not heal as expected, slight degrees of myopia or hyperopia may remain, which will not, however, prevent you from functioning without optical aids. If this is not satisfactory, corrective surgery may be done, which is, in any case, much briefer than the initial surgery.



7. Is the result permanent?

YES. Decades of such operations have shown that results are permanent.

8. Does my insurance cover the cost of the operation?

If you have a private insurance policy, you will have to consult your insurance agent. For state funds you will need to ask the relevant authorities.

The stages of refractive surgery

1. Pre-operative check

All patients are not suitable candidates for refractive surgery. Especially myopes should be more of 18 years of age and their refractive error must be stable at least for the year prior to surgery.

The preoperative examination can last up to 2 hours during which all the ocular parameters are checked and evaluated. Counter indications include chronic corneal, retinal diseases or any active ophthalmological disease.

If you wear soft contact lenses, you must refrain from wearing them at least two weeks prior to the check and four weeks if you wear semi-hard ones.

The examination of the ocular fundus (the deep structures of the eye) is done with mydriasis (drops are applied to dilate the pupil) and so vision is blurred for a few hours.

If you drive, it is suggested that someone accompanies you on the way home and that you wear sunglasses.

If you have any old prescriptions for contact lenses, glasses or for medical treatment for the eyes, it is advisable that you bring them with you for the pre-op.

The more we know about the changes in your eyesight over the course of time, the better we can plan your treatment.



2. On the day of the surgery

- Wear comfortable clothes and avoid wearing wool.
- Do not wear perfume, make-up, hair gel or hairspray because the slight evaporations of these chemicals may affect the laser beam.
- You must have sunglasses with you and someone must accompany you home because you won't be able to drive.
- The surgery lasts 15 minutes for each eye. The total amount of time you will be at the Clinic is approximately two hours.



3. Post-operative instructions

- Immediately following surgery, vision may be blurred and it is normal to feel an itching sensation or that there is dust in your eyes. These symptoms will gradually disappear in a few days.
- Make sure to closely follow instructions concerning the prescribed eye drops.
- You must see the doctor the very next day following surgery, and then in a week's time, a fortnight after that, a month after and finally whenever your doctor feels necessary.
- Do not use lotions, creams, make-up around the eyes or hair dyes to avoid infection.
- Moderate physical exercise is allowed 2-3 days following surgery and swimming one month after surgery.
- Sports involving intense physical exercise, such as boxing, football, karate etc, should be avoided for at least four weeks.
- Smoke, dust or perspiration may cause irritation or tears without any further complications.

Eye protection after refractive surgery

Refractive surgery restores functional vision but does not provide any protection against UVA light. Sunglasses are necessary to protect the eye and especially the cornea from harmful radiation.

The sunglasses used must follow the EU standards and must be used depending on their UV protection. For example brown, dark green or gray colours are better in the bright sunlight, the yellow or orange for the twilight or the cloudy weather and polaroids are ideal for the sea and the sand (big reflexion surfaces) but not the snow.

Sun lenses must be manufactured like optical lenses with the best UV absorbance.

For the sports, except the right filters, special protective goggles are necessary. Lenses must be from polycarbonate which are very light, resistant to shock and have excellent optical qualities

Also for people working with computers there are special lenses, without optical correction, that reduce the eye strain during work in front of a monitor.





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