Refractive Surgery

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If your first language is not English or Arabic we can arrange for an interpreter to be available. Please let us know in advance if you require this service.

This booklet has been designed to help answer some of the questions you and your family or friends understand the operation, to explain what is involved and what the possible risks are. If you have any questions and concerns, please do not hesitate to speak to a doctor or nurse caring for you.

Refractive surgery (Laser vision correction) techniques include:

What Is Refractive Surgery?

If you have a refractive error, such as nearsightedness (myopia), farsightedness (hyperopia), astigmatism or presbyopia, refractive surgery is a method for correcting or improving your vision. There are various surgical procedures for correcting or adjusting your eye's focusing ability by reshaping the cornea (the clear round dome at the front of your eye). Other procedures involve implanting a lens inside your eye. The most widely performed type of refractive surgery is LASIK (laser-assisted in situ keratomileusis), where a laser is used to reshape the cornea.

For people who are nearsighted, certain refractive surgery techniques will reduce the curvature of a cornea that is too steep so that the eye's focusing power is lessened. Images that are focused in front of the retina, due to a longer eye or steep corneal curve, are pushed closer to or directly onto the retina following surgery.

Farsighted people will have refractive surgery procedures that achieve a steeper cornea to increase the eye's focusing power. Images that are focused beyond the retina, due to a short eye or flat cornea, will be pulled closer to or directly onto the retina after surgery.

Astigmatism can be corrected with refractive surgery techniques that selectively reshape portions of an irregular cornea to make it smooth and symmetrical. The result is that images focus clearly on the retina rather than being distorted due to light scattering through an irregularly shaped cornea.

Refractive surgery might be a good option for you if you:

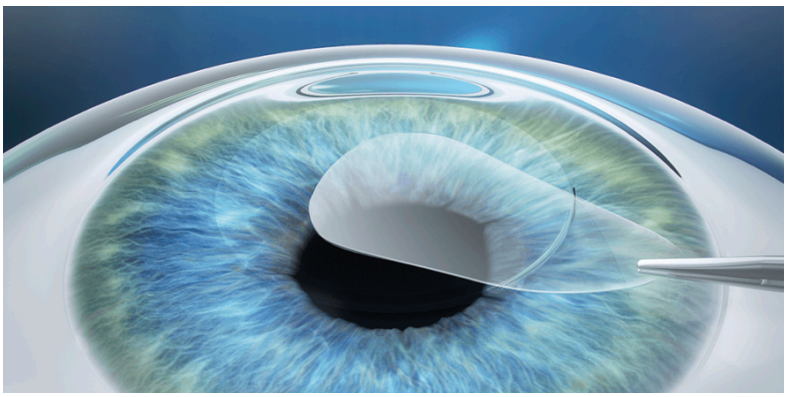
- Want to decrease your dependence on glasses or contact lenses.
- Are free of eye disease.
- Accept the inherent risks and potential side effects of the procedure.
- Understand that you could still need glasses or contacts after the procedure to achieve your best vision.
- Have an appropriate refractive error.

If you are happy wearing contact lenses or glasses, you may not want to have refractive surgery. Together, you and your ophthalmologist can weigh the risks and rewards of refractive surgery/ Laser vision correction.

- The option of Monovision should be discussed with your ophthalmologist.
- Ensure that the procedure in this document have been presented to you in details and explained to you by your ophthalmologist, and that your ophthalmologist has answered all your questions to your satisfaction.
- There is no universally-accepted, best method for correcting refractive errors. The best option for you should be decided after a thorough examination and discussion with your ophthalmologist. If you are considering refractive surgery, you and your ophthalmologist can discuss your lifestyle and vision needs to determine the most appropriate procedure for you.

SMILE

SMILE (Small Incision Lenticule Extraction) uses a femtosecond laser -of the same type used to create a LASIK flap- to define a lens shaped piece of corneal tissue that is removed by the surgeon through a small incision to correct focus. This is like LASIK without the LASIK flap, but the thickness of tissue removal is slightly greater and the tissue may be removed from slightly deeper in the cornea. End results are similar to those for LASIK and surface laser treatments.



What Is Small Incision Lenticule Extraction?

Small incision lenticule extraction (SMILE) is a newer type of laser refractive surgery. This kind of surgery uses a laser to treat myopia (nearsightedness) a specific refractive error.

For you to see clearly, light rays must travel through your cornea and lens. The cornea and lens refract (bend) the light so it lands on the retina. With a refractive error, the shape of your cornea or lens keeps light from bending properly. When light is not focused on the retina as it should be, your vision is blurry.

With SMILE, your ophthalmologist uses a laser to change the shape of your cornea. This improves the way light rays are focused on the retina. SMILE is FDA-approved to treat mild nearsightedness.

The goal of SMILE is to correct your nearsightedness to improve your vision. SMILE may reduce your need for eyeglasses or contact lenses. In some cases, it may even allow you to do without them completely.

The Benefits of SMILE

SMILE is a newer refractive surgery. Ophthalmologists expect that it will have a couple advantages over LASIK for treating nearsightedness and have similar good outcomes.

- No corneal flap is made during SMILE. There should not be problems with the flap that can happen with LASIK.

- The corneal disc is removed through a very small incision. Since the surface of the cornea is minimally disturbed, long-term dry eye should be less common with SMILE.

Who Is a Good Candidate for SMILE?

If you have an active lifestyle or job, SMILE may be a better option for you than LASIK or similar procedures. This is because SMILE does not involve cutting a flap in your cornea like LASIK. If you are highly active, you could accidentally dislodge a corneal flap, causing problems.

To have SMILE, you need to meet certain requirements. Here are some of them:

- You should be 21 years or older.
- Your eye prescription should not have changed in the last year.
- Your corneas need to be healthy, and your overall eye health must be generally good.
- You need to have realistic expectations about what SMILE can and cannot do for you.

Some people are not candidates for SMILE. They include people with:

- An unstable (changing) refractive error.
- Skin or other disease that can affect healing.
- Excessive scarring or keloid formation.
- Cornea abrasions or disease.
- Advanced glaucoma.
- A cataract affecting vision.
- Uncontrolled diabetes.
- A history of eye disease or eye surgery.
- History of certain eye infections.
- Those who are pregnant or nursing.

Your ophthalmologist can talk with you about other conditions that may keep you from having SMILE.

To determine whether you are a candidate for SMILE, your ophthalmologist will examine your eyes. Here's what he or she will do:

- Check the overall health of your eyes.
- Measure your cornea.
- Check your pupil size.
- Measure your nearsightedness.

- The option of Monovision should be discussed with your ophthalmologist.
- Ensure that the procedure in this document have been presented to you in details and explained to you by your ophthalmologist, and that your ophthalmologist has answered all your questions to your satisfaction.

- If you are happy wearing contacts or glasses, you may not want to have refractive surgery. Together, you and your ophthalmologist can weigh the risks and rewards of SMILE.

What to Expect With SMILE

Before surgery: You and your ophthalmologist should discuss your expectations for SMILE. People who have SMILE to achieve perfect vision without glasses or contact lenses run the risk of being disappointed. SMILE allows people to do most of their everyday tasks without corrective lenses. But you might need to wear glasses for certain activities, such as reading or driving at night.
Your ophthalmologist will examine your eyes and make sure you are a candidate for SMILE. Here is what he or she will do:

- Test your vision. This is to make sure that your vision has not changed. It also shows how high your nearsightedness is and whether SMILE can be used to correct your vision.
- Check for other eye problems. Your ophthalmologist will make sure that you do not have eye problems. This is because other problems could affect your surgery, or because SMILE could make those other problems worse.
- Measure and map the surface of your cornea. Your ophthalmologist will check the thickness of your cornea and make precise measurements of the cornea's surface. Your eye surgeon uses these measurements to program the computer-based laser used during surgery.
- Measure your pupil size.

During SMILE: The procedure usually takes about 10 – 15 minutes. Here is what to expect:

- The laser is programmed with specific measurements for your eye.
- Your eye will be numbed with eye drops.
- Your eye surgeon will place an eyelid holder on your eye to keep you from blinking.
- A suction ring helps keep the eye from moving.
- The laser sculpts a disc-shaped piece of cornea below the surface of your eye. This is the "lenticule" that gives the surgery its name.
- The laser then makes a small incision in your cornea. This gives your surgeon access to the disc that the laser formed. The entire laser treatment takes about 30 seconds.
- Your surgeon removes the disc-shaped piece of cornea through the incision. This reshapes your cornea.

After surgery: Keep these things in mind for the days after surgery.

- You will need to have someone drive you home after surgery.
- You should plan to take a nap or just relax for the rest of the day.
- You should take your eyedrop medicine as prescribed by your surgeon.
- Your vision may be blurry right after SMILE surgery. As you heal over the next few days and weeks, your vision will gradually improve.
- You can do most normal activities after a day or two. Avoid getting water in your eyes for a few days.

What Are the Risks of SMILE?

It is not a realistic expectation that this procedure will result in perfect vision, at all times, under all circumstances, for the rest of the patient's life.
Like any surgery, SMILE carries risks of problems or complications you should consider. These include:

- Glare and halos around lights, particularly at night.
- Debris where the corneal disc was removed.
- Inflammation within the treated area.
- Infection.
- Retreatment which must be done with surface PRK.

Also, with SMILE, your vision may end up being under corrected or over corrected. These problems often can be improved with glasses, contact lenses, or additional laser surgery.
Most complications can be treated without any loss of vision. However, very rare problems may include:

- Blindness
- Having worse vision than before SMILE, even with glasses or contacts (called loss of best-corrected vision)

Short term risks/ complications include (first 72 to 96 hours):

- Mild discomfort/ pain.
- Dry eye/ Feeling something is in the eye.

Long term risks/ complications include:

- Partial or complete blindness.
- Very rarely need for corneal transplantation.
- Failure of procedure /Further procedures.
- Lost vacuum.
- Treatment decentration.
- Incomplete bubble separation (black islands).
- Incision tear/ Irregular healing.
- Lenticule adherence to the cap.

- Cap perforation.
- Bleeding.
- Epithelial defects/ Punctate epithelial erosions.
- Epithelial ingrowth.
- Diffuse lamellar keratitis (DLK).
- Corneal infiltrates.
- Interface debris/secretion.
- Interface haze.
- Interface foreign body.
- Corneal striae.
- Corneal oedema.
- Corneal perforation which as well could be the result of an infection leading to permanent scarring/ visual loss.
- Keratoconus/ ectasia.
- Balance problem in vision between the eyes.
- Glare/ starbursts/ halos around light/ night vision problems/ sensitivity to light.
- Loss of/ worse best vision even with glasses/ contact lenses.
- Overcorrection/ undercorrection which as well cannot be corrected even with glasses/ contact lenses.
- Need reading glasses at probably an earlier age.
- IOP elevation.
- Poor outcome might manifest weeks/ months/ years after procedure.
- Floaters/ Retinal detachment.
- Hemorrhage/ arterial or venous blockage.
- Fluctuation in vision.
- Drooping of eyelid.
- Other non-mentioned complications.

LASIK
(laser in situ keratomileusis)

LASIK (laser-assisted in situ keratomileusis) is an outpatient refractive surgery procedure used to treat nearsightedness, farsightedness and astigmatism. A laser is used to reshape the cornea — the clear, round dome at the front of the eye — to improve the way the eye focuses light rays onto the retina at the back of the eye.

With LASIK, an ophthalmologist creates a thin flap in the cornea using either a blade or a laser. The surgeon folds back the flap and precisely removes a very specific amount of corneal tissue under the flap using an excimer laser. The flap is then laid back into its original position where it heals in place.

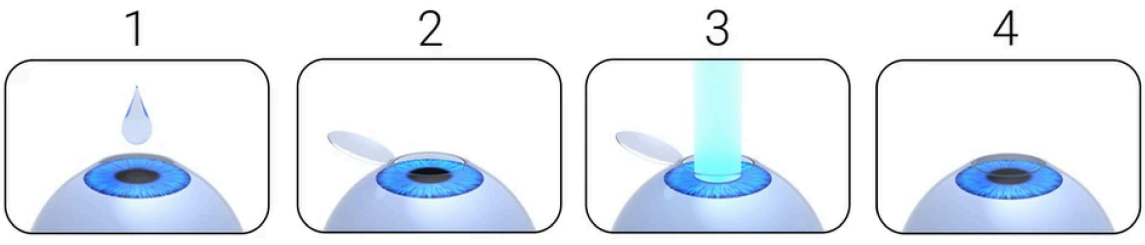
For people who are nearsighted, LASIK is used to flatten a cornea that is too steep. Farsighted people will have LASIK to achieve a steeper cornea. LASIK can also correct astigmatism by shaping an irregular cornea into a more normal shape.

It is important that anyone considering LASIK have realistic expectations. LASIK allows people to perform most of their everyday tasks without corrective lenses. However, people looking for perfect vision without glasses or contacts run the risk of being disappointed. More than 90 percent of people who have LASIK achieve somewhere between 20/20 and 20/40 vision without glasses or contact lenses. If sharp, detailed 20/20 vision is essential for your job or leisure activities, consider whether 20/40 vision would be good enough for you.

You should be comfortable with the possibility that you may need a second surgery (called a retreatment or enhancement) or that you might need to wear glasses for certain activities, such as reading or driving at night. Also, you should be aware that LASIK cannot correct presbyopia, the age-related loss of close-up focusing power.

How the LASIK procedure works

LASIK is performed while the patient reclines under a surgical device called an excimer laser in an outpatient surgical suite.



First, the eye is numbed with a few drops of topical anesthetic. An eyelid holder is placed between the eyelids to keep them open and prevent the patient from blinking. A suction ring placed on the eye lifts and flattens the cornea and helps keep the eye from moving. The patient may feel pressure from the eyelid holder and suction ring, similar to a finger pressed firmly on the eyelid.

From the time the suction ring is put on the eye until it is removed, vision appears dim or goes black. Once the cornea is flattened, a hinged flap of corneal tissue is created using an automated microsurgical device, either a laser or blade. This corneal flap is lifted and folded back. Then the excimer laser preprogrammed with the patient's unique eye measurements is centered above the eye.

The surgeon checks that the laser is positioned correctly. The patient looks at a special pinpoint light, called a fixation or target light, while the excimer laser sculpts the corneal tissue. Then the surgeon places the flap back into position and smoothens the edges. The corneal flap sticks to the underlying corneal tissue within two to five minutes, and stitches are not needed.

The patient should plan to have someone drive him or her home after the procedure and then take a nap or just relax. To help protect the cornea as it heals, the surgeon may place a transparent shield over the eye(s) to protect against accidental bumps and to remind the patient not to rub the eye(s). The patient may need to wear the shield only when sleeping. The surgeon will provide eye drops to help the eye heal and relieve dryness.

It may take three to six months after LASIK surgery for the improvements in a person's vision to fully stabilize and any side effects to go away.

LASIK risks and side effects

LASIK, like any surgery, has potential risks and complications that should be carefully considered. It is not a realistic expectation that this procedure will result in perfect vision, at all times, under all circumstances, for the rest of the patient’s life. Since it was approved by the FDA in 1998, LASIK has become a popular treatment and the overall complication rate is low. Infection and inflammation are possibilities, as with any surgical procedure, and usually can be cleared up with medications.

Problems with the corneal flap after surgery sometimes make further treatment necessary. There is a chance, though small, that vision will not be as good after the surgery as before, even with glasses or contacts.

Some people experience side effects after LASIK that usually disappear over time. These side effects may include hazy or blurry vision; difficulty with night vision and/or driving at night; scratchiness, dryness and other symptoms of the

condition called "dry eye"; glare, halos or starbursts around lights; light sensitivity; discomfort or pain; or small pink or red patches on the white of the eye. In a small minority of patients, some of these effects may be permanent.

Sometimes a second surgery, called a retreatment or enhancement, may be needed to achieve the desired vision correction. This is more likely for people who were more nearsighted, farsighted, or had higher astigmatism before LASIK, those whose vision originally needed more intensive correction. Approximately 10.5 percent of LASIK patients require a retreatment.

- The option of Monovision should be discussed with your ophthalmologist.
- Ensure that the procedure in this document have been presented to you in details and explained to you by your ophthalmologist, and that your ophthalmologist has answered all your questions to your satisfaction.

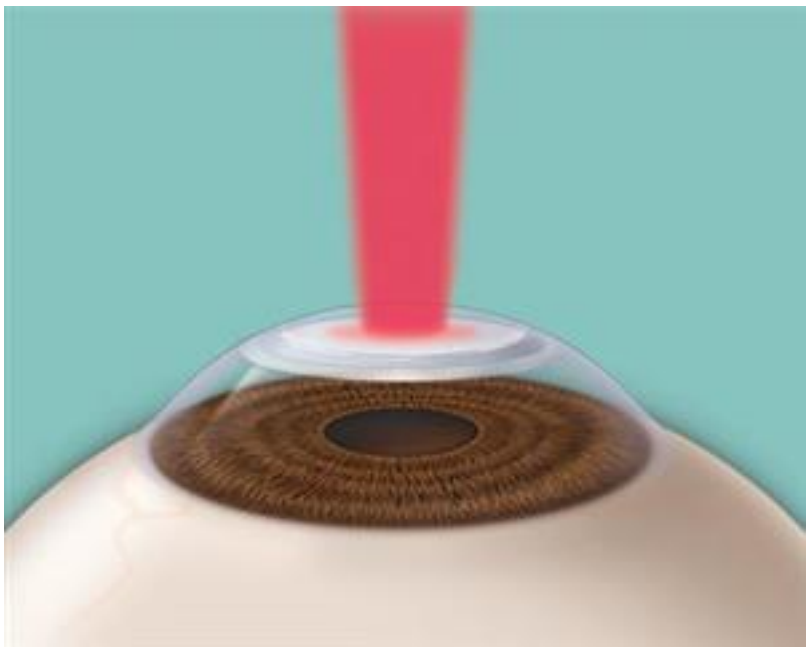
Short term risks/ complications include (first 72 to 96 hours):

- Feeling something is in the eye.
- Fluctuations in the sharpness of vision.

Long term risks/ complications include:

- Very rarely partial or complete blindness/ the need for corneal transplantation.
- Failure of procedure or further procedures.
- Loss of, or worse best vision or overcorrection/ undercorrection which cannot be corrected even with glasses/ contact lenses.
- The need for future enhancement procedures or for glasses either for distance or reading/ The need for reading glasses at probably an earlier age.
- Microkeratome and Femtosecond laser complications:
  - Malfunction could be accompanied by visual loss.
  - An entire portion of the cornea could cut off/ lost.
  - An incomplete/ too thin flap with the need to suture the cornea.
- Irregular flap healing/ distorted cornea.
- Corneal perforation (which might be the result of an infection) could result in permanent scarring/ visual loss.
- Keratoconus/ ectasia.
- “Balance” problem between the eyes after LASIK (anisometropia).
- Epithelial ingrowth/ Interface foreign body.
- Corneal striae/ oedema/ Cornea becoming fragile to trauma postoperatively.
- IOP elevation.
- Drooping of eyelid.
- Floaters/ Retinal detachment.
- Hemorrhage/ arterial or venous blockage.
- Poor outcomes which might manifest weeks/ months/ years after procedure.
- Other non-mentioned complications.

Photorefractive Keratectomy (PRK)?



PRK

Photorefractive keratectomy (PRK) is a type of refractive surgery. This kind of surgery uses a laser to treat vision problems caused by refractive errors. You have a refractive error when your eye does not refract (bend) light properly.

With PRK, your ophthalmologist uses a laser to change the shape of your cornea. This improves the way light rays are focused on the retina. PRK is used to treat myopia (nearsightedness), hyperopia (farsightedness) and astigmatism.

The goal of photorefractive keratectomy is to correct your refractive error to improve your vision. PRK may reduce your need for eyeglasses or contact lenses. In some cases, it may even allow you to do without them completely.

Should I Get PRK?

If you have dry eyes or thin corneas and want to have refractive surgery, PRK may be a good choice for you. This is because some other types of refractive surgery, such as LASIK, are not recommended if you have these conditions.

Also, if you have a very active lifestyle or job, PRK may be a better option for you than LASIK or similar procedures. This is because PRK does not involve cutting a flap in your cornea like LASIK and similar surgeries do. If you are highly active, you could accidentally dislodge a corneal flap, causing problems.

Some people who have certain lenses put in their eyes during cataract surgery may have PRK to fine-tune their vision.

To have PRK, you need to meet certain requirements:

- You should be 20 years or older (ideally, over 21 years old, when vision is more likely to have stopped changing).
- Your eye prescription should not have changed in the last year.
- Your refractive error must be one that can be treated with PRK.
- Your corneas need to be healthy, and your overall eye health must be generally good.
- You need to have realistic expectations about what PRK can and cannot do for you.

Some people are not candidates for PRK. They include people with:

- An unstable (changing) refractive error.
- Skin or other disease that can affect healing.
- A history of a lot of scarring.
- Cornea abrasions or disease.
- Advanced glaucoma.
- A cataract affecting vision.
- Uncontrolled diabetes.
- Pregnant or nursing women.
- History of certain eye infections.

Your ophthalmologist can talk with you about other conditions that may keep you from having PRK.

To determine whether you are a candidate for PRK, your ophthalmologist will examine your eyes. Here's what will be done:

- The overall health of your eyes will be checked.
- Measurements of your cornea will be taken.
- Your pupil size will be checked.
- Your refractive error will be measured.

What Happens During Photorefractive Keratectomy (PRK)?

Before PRK Surgery

You and your ophthalmologist will discuss your vision needs based on your lifestyle. For example, if you play sports, you may be seeking clear distance vision from surgery.

Also, you and your ophthalmologist should discuss your expectations for PRK. People who have PRK to achieve perfect vision without glasses or contacts run

the risk of being disappointed. PRK allows people to do most of their everyday tasks without corrective lenses. However, you might need to wear glasses for certain activities, such as reading or driving at night.

Your ophthalmologist will thoroughly examine your eyes and make sure you are a candidate for PRK. Here is what he or she will do:

- Test your vision. This is to make sure that your vision has not changed. It also shows how high your refractive error is and whether PRK can be used to correct your vision.
- Check for other eye problems. Your ophthalmologist will make sure that you do not have eye problems. This is because other problems could affect your surgery, or PRK could make those other problems worse.
- Measure and map the surface of your cornea. Your ophthalmologist will check the thickness of your cornea and make precise measurements of the cornea's surface. Your eye surgeon uses these measurements to program the computer-based laser used during surgery.
- Measure your pupil size. He or she will also measure the size of your pupil.

Pachymetry is used to measure the thickness of your cornea.

During Photorefractive Keratectomy (PRK)

PRK is usually done in an outpatient surgery center. The procedure usually takes about 15 minutes. Here is what to expect:

- Your eye will be numbed with eye drops.
- Your eye surgeon will place an eyelid holder on your eye to keep you from blinking.
- Then your ophthalmologist will remove the outer layer of cells on your cornea, called the epithelium. To do this, he or she may use a special brush, blade, laser or alcohol solution.
- You will be asked to stare at a target light so that your eyes will not move. The ophthalmologist then reshapes your cornea using a laser. The laser is a special

instrument that has been programmed with measurements for your eye. While your ophthalmologist is using the laser, you will hear a clicking sound.

With photorefractive keratectomy (PRK), a special brush may be used to remove the outermost layer of the cornea (left); a laser removes tissue from the cornea to reshape it (right).

What Is PRK Surgery Recovery Like?

Right after surgery, your ophthalmologist will place a "bandage" contact lens over your eye to help it heal.

- You will need to have someone drive you home after surgery. You should plan to go home and take a nap or just relax after the surgery.
- Your surgeon may suggest that you take a few days off from work. Also, you should avoid strenuous activity for up to a week after surgery, as this could slow the healing process.
- For two to three days after PRK, you may have some eye pain. Over-the-counter medicine usually controls the pain. Occasionally, some people may need eye drop pain relievers or other prescription medicine to relieve pain. Be sure to call your ophthalmologist if your pain is not helped by over-the-counter medicines.
- You will need to use eye drop medicine for up to a month or as prescribed by your ophthalmologist. Be sure to follow your doctor's instructions for using this medicine to help healing.
- After PRK, you will need to wear sunglasses outside for as long as your doctor tells you. This is because sun exposure can lead to corneal scarring after surgery, causing vision problems.

At first, your vision will be blurry after PRK. Over 3–5 days, as you heal, your vision will gradually improve. Keep in mind it may take a month or longer to achieve your best vision.

What Will My Vision Be Like After Photorefractive Keratectomy (PRK)?

About 9 out of 10 people (90 percent) who have PRK end up with 20/40 vision or better without glasses or contact lenses.

It is important to know that PRK cannot correct presbyopia. This is the normal, age-related loss of close-up vision. With or without refractive surgery, almost everyone who has excellent distance vision will need reading glasses after around age 40.
To help with presbyopia, some people have PRK to get monovision. This means one eye is left slightly nearsighted and the other eye is adjusted for distance vision. The brain learns to adapt so that the nearsighted eye is used for close work, while the other eye sees distant objects. Monovision is not for everyone. To see if you are able to adapt to this correction, you will probably want to try monovision with contact lenses first.

What Are the Risks of PRK Surgery?

It is not a realistic expectation that this procedure will result in perfect vision, at all times, under all circumstances, for the rest of the patient's life. Like any surgery, PRK carries risks of problems or complications you should consider.

Most complications can be treated without any loss of vision. However, very rare problems may include:

- Blindness, Partial or complete.
- Having worse vision than before PRK, even with glasses or contact lenses (called loss of best-corrected vision).

Short term risks/ complications include (first 72 to 96 hours):

- Discomfort/ pain.
- Feeling something is in the eye.
- Tearing.
- Corneal swelling.
- Double vision.
- Ghost images.
- Light sensitivity.

Long term risks/ complications include:

- Very rarely, the need for corneal transplantation.
- Cloudiness of the cornea (called corneal haze).
- Starbursting/ glare / halos around lights, particularly at night, and night vision problem.
- Vision may end up being undercorrected or overcorrected. These problems might be improved with glasses, contact lenses, or additional laser surgery.
- The need for reading glasses at probably an earlier age.
- IOP elevation.
- Keratoconus/ ectasia.

- Poor outcome might manifest weeks/ months/ years after PRK.

Less frequently:

- Itching.
- Dry eye.
- Persistent corneal scarring affecting vision.
- Corneal infection/ ulceration.
- Irregular astigmatism.
- Cataract.
- Drooping of eyelid.
- For ladies: Pregnancies/ nursing could adversely affect the treatment result.
- Failure of procedure.
- Further procedures.
- MMC is very potent and, under certain circumstances, potentially toxic. Eye-related and vision-threatening complications that have been reported when using MMC for other conditions include, but are not limited to: secondary glaucoma, corneal edema, corneal or scleral thinning or perforation (requiring corneal transplants), permanent stem cell deficiency, sudden onset mature cataract, corneal decompensation, corectopia (displacement of the pupil from its normal position), iritis, scleral calcification, scleral melt, retinal vascular occlusion, conjunctival irritation (redness of the eye), and incapacitating photophobia and pain. Although these complications have been seen in various types of eye surgeries, no significant complications have been reported using the low-dose technique described for corneal haze removal and prevention in refractive surgery.
- Other non-mentioned complications.

Alternative Refractive Surgery Procedures

Today's refractive surgery options for vision correction range from corneal reshaping with lasers (as aforementioned) to surgical insertion of artificial lenses. Following are some of the alternative refractive surgery procedures to LASIK.

LASEK

A microsurgical instrument called a trephine is used to create a flap of epithelial corneal tissue, and an alcohol solution is used to loosen the epithelial cells. Once the epithelial flap is created and moved aside, the procedure is the same as PRK. After corneal sculpting, the epithelial flap is repositioned and smoothed with a small spatula, then secured with a "bandage" soft contact lens to promote epithelial healing, which takes about four days.

Phakic Intraocular Lenses (IOLs)

Phakic IOLs are designed for people with high degrees of refractive errors that cannot be safely corrected with corneal-based refractive surgery. The phakic IOL, sometimes referred to as an implantable contact lens, is surgically implanted inside the eye in front of the eye's natural lens. The eye's natural lens is not removed, so patients can retain their pre-existing ability to focus.

During the phakic IOL procedure, your ophthalmologist places the phakic IOL either in front of or behind the iris of the eye. Once the IOL is properly positioned inside the eye, it provides the necessary correction to redirect light rays precisely onto the retina.

References:

This leaflet was edited by specialist ophthalmologists from the GCEO Group® who are licensed in the EU and the Middle East. This leaflet was edited based and in accordance to the guidelines of the:

- The American Academy of Ophthalmology (USA) - Preferred Practice Pattern Guidelines:

https://www.aao.org/about-preferred-practice-patterns

- The Royal College of Ophthalmologists (UK):

https://www.rcophth.ac.uk/standards-publications-research/clinical-guidelines/

- National Institute for Health and Care Excellence (UK):

https://www.nice.org.uk/about/what-we-do/our-programmes/nice-guidance/nice-guidelines

- The International Council of Ophthalmology:

http://www.icoph.org/enhancing_eyecare/international_clinical_guidelines.html

More resources:

The American Academy of Ophthalmology (USA) - Eye Health A-Z:
https://www.aao.org/eye-health/a-z