LASIK
Laser Assisted In-Situ Keratomileusis (LASIK) also known as Laser Intrastromal Keratomileusis, combines the precision of the excimer laser delivery system with the benefits of a sophisticated surgical instrument known as a microkeratome or the IntraLase laser. First, by utilizing either a microkeratome or the IntraLase laser, a thin layer of the cornea, or corneal flap, is created and lifted up. Then ultraviolet light energy pulses from the excimer laser reshape the exposed cornea with accuracy up to 0.25 microns. By adjusting the pattern of the laser beam, it is possible to treat nearsightedness, farsightedness and astigmatism. After the cornea has been reshaped by the laser, the flap is replaced in its original position.

Because of the cornea’s extraordinary natural bonding qualities, healing is rapid and does not require sutures. The entire procedure takes less than 15 minutes for both eyes.

Traditionally, glasses or contact lenses provided the source of correction for imperfect vision. Glasses are relatively trouble free and many people regard them as a fashion accessory to enhance their appearance. With the advent of newer technology, and people’s intense desire to be free of glasses or contact lenses, ophthalmic surgeons developed surgical alternatives for refractive correction. Today, procedures such as Laser Assisted In-Situ Keratomileusis (LASIK), PRK, LASEK and EPI-LASIK are the procedures of choice for laser vision correction using the excimer laser. We use only state-of-the-art FDA approved VISX Star S-4 and Autonomous LADAR S-4 laser equipped with the most recent software upgrades, active eye trackers, iris registration and large pupil capability. Additionally, our lasers feature “custom cornea” wavefront technology to achieve the most personalized vision correction. We are also one of the few centers to offer the all-laser approach to refractive surgery employing the IntraLase laser to create the flap and the excimer laser to reshape the cornea.

What is laser vision correction?
Laser vision correction encompasses several procedures (LASIK, CustomLASIK, PRK, LASEK and EPI-LASIK) which utilize the excimer laser to correct nearsightedness, farsightedness, and astigmatism. During the treatment, the laser’s cool ultraviolet light removes a small amount of corneal tissue to reshape the corneal surface in order to allow light to be more sharply focused onto the retina, thereby improving vision.

Patients considering laser vision correction should have a stable refraction for at least one year. There is no upper age limit. After the procedure, eye glass correction for distance vision will generally not be required, although some patients may desire them for certain activities, such as driving at night. If you are in the age range where bifocals or “readers” are normally required for close vision (40+ years of age), you will need reading glasses following the procedure. This condition is known as presbyopia and is part of the natural aging process. Presbyopia currently cannot be corrected with laser vision correction, unless one eye is adjusted for near vision. This is called “monovision”.

Expectations
As with all surgery, there is no guarantee of the results of LASIK. Although the success and satisfaction rates are extremely high, complications and/or side effects do occur in a small percentage of patients. Additionally, some patients do not have complications or side effects, but are simply not satisfied with the results of surgery.

You are considering these procedures because nature did not give you perfect vision. Similarly, surgeons, surgical equipment and procedures are not perfect. Additionally, individual variations related to healing can decrease the predictability. Thus, we cannot give you a perfect eye.

Our goal is to give you better uncorrected vision (without glasses or contacts) than you presently have. We do not promise results, but we can promise to do the best we possibly can based on our extensive experience and our commitment to excellence.

Following surgery, you must plan to wear glasses some of the time to fine tune your vision - especially for night driving. If you are over 40 and elect to not have monovision, then you will need reading glasses.

FDA Approval
We have been performing LASIK since 1996. Wavefront is also FDA
approved for nearsightedness and farsightedness. In November 1999, LASIK was fully approved by the FDA for myopia up to -14.00 diopters, astigmatism up to 5.00 diopters, and hyperopia up to +6.00 diopters.

**Combined Astigmatism Correction:**
If astigmatism correction is necessary, it will be performed by the laser at the time of the LASIK. Astigmatism touch-ups (enhancement) may be performed either with the laser or with a small precision diamond surgical scalpel (astigmatic keratotomy - AK).

**Complications During the Operation:**
These are uncommon, and include the following: Inability to seat the suction ring and/or inadequate suction, incomplete microkeratome pass, irregular cap (flap), tearing of the flap, or entrance into the interior of the eye. These may prevent us from performing LASIK or result in an inadequate flap requiring the procedure to be rescheduled in 3 to 6 months. This could result in astigmatism or inadequate correction. Less common is the creation of a free unhinged cap (which requires suturing back in place) or loss of the cap (very unusual). If the cap is lost, a partial or full-thickness corneal transplant would be required weeks to months following the cap loss. Vision without glasses or contacts is generally poor following these complications. A few cases in many millions of procedures have resulted in blindness from disruption of the blood supply to the optic nerve or retina.

Possible laser-related complications include decentered ablation (the treatment area is decentered), or improper focus by the patient on the target device. These can cause undercorrections, overcorrections, and astigmatism, which could require additional surgical corrections (laser or astigmatic keratotomy) and quite possibly result in loss of best correctable visual acuity, glare, ghost images, double vision and halos which cannot be corrected. Generally, a decentered ablation cannot be corrected surgically and results in the need to wear a gas permeable contact lens.

**Post-Operative Complications and Side Effects of LASIK**

- **Pain:**
  During the procedure, LASIK is basically painless. Topical anesthetic drops provide excellent anesthesia. No injections are required. Patients experience pressure when the suction ring is applied. This lasts for approximately 20 seconds. There is usually minimal to no post-operative pain following LASIK. Some initial soreness may occur due to the suction ring. A feeling of scratchiness may be experienced the first night and will usually be gone by the following morning.

- **Subconjunctival Hemorrhages:**
  Small broken vessels on the white of the eye due to the suction ring are common. They cause no problem and clear within two weeks.

- **Light Sensitivity:**
  Your eyes will be somewhat light sensitive and you may experience glare during the day and at night during the first few months.

- **Overcorrection:**
  There can be a mild overcorrection initially after almost all refractive surgeries. This will usually diminish over the following weeks to months. A significant permanent overcorrection can be corrected with glasses or contact lenses or a laser “touch-up”.

- **Ghost Images and Double Vision from One Eye:**
  This is due to the surface of the cornea healing with a wavy configuration. This wavy surface can also give rise to distortion of images and a decrease in spectacle correctable vision, glare, halos, starbursts and decreased contrast vision. Many cases of surface waviness (irregular astigmatism) resolve within a year. However, if it does not, then these symptoms can be diminished by the use of a gas permeable contact lens. While the lens is in place, the distortion and ghost image will not be as noticeable. However, when the lens is removed, the distortion and ghost images will reappear. A very small number of patients may be required to wear gas permeable contact lenses full time following LASIK in order to achieve their very best vision and to diminish distortions.

  Sometimes visual distortions can be caused by a LASIK-induced “dry eye”. If this is the case, with the use of non-preserved artificial tear drops, oral flax seed oil, plugs in the tear drains and possibly Restasis drops most cases of post-LASIK dry eye resolve within 12 to 18 months.

- **Folds** (like the striations seen just before tearing a piece of cellophane off of a roll) occur in about 5% of flaps in people with high amounts of myopia (-6 diopters or more), and occasionally lower myopes who require large zones of treatment. Most of the time the folds do not cause symptoms. But, occasionally they can result in distorted vision, decreased vision, or a decrease in contrast appreciation. Additionally, patients will notice starbursts, glare and halos at night. If patients have symptoms from microfolds, the flaps must be lifted and an attempt to “iron-out” the folds undertaken. However, in some cases, the folds cannot be “ironed out” and patients may have persistent symptoms and be required to wear a gas permeable contact lens to decrease these symptoms.
Night Vision:
Glare, halos, and starbursts around lights are very common initially following LASIK. These symptoms may last 6-12 months. They generally diminish significantly by one year, but may persist. A decrease in night vision quality (contrast) may be noticed. Patients occasionally require night driving glasses following refractive surgery.

Enhancement Procedures:
Enhancements or touch-ups may be necessary following LASIK. Enhancements may be requested due to regression, undercorrection, overcorrection or induced astigmatism. In the milder myopic corrections (under -4.00 diopters), enhancements are usually needed in less than 2% of cases. In moderate myopic corrections (-4.00 to -6.00 diopters), the enhancement rate is approximately 5-10%. The higher myopic corrections (-6.00 diopters and above) will have a greater percentage of enhancements. The higher the myopia, astigmatism, or hyperopia, the higher the enhancement rate. When astigmatism correction is combined with myopic or hyperopic correction, the need for enhancements is slightly increased. This is especially true with astigmatism corrections over 3.00 diopters. Occasionally, astigmatism will be created by the LASIK or laser procedure where none existed pre-operatively. In most (but not all) cases, this induced (regular) astigmatism can be reduced with an astigmatic keratotomy or a laser touch-up procedure. The enhancement rate for higher amounts of hyperopia/farsightedness (+ 4.00 and above) is about 20%. Also, patients who are long-term hard contact lens wearers (RGP lenses) will have a higher enhancement rate.

Infection:
This can be a serious complication, but fortunately is extremely rare in all types of refractive surgery. Most can be treated effectively with antibiotics, but in the extremely rare case, vision or the eye could be permanently lost.

Permanent Decrease in Vision:
All refractive surgery results in some decrease in what is known as contrast vision - the ability to discern subtle shades of gray. This is a qualitative measurement of vision. Clinically, some patients will notice a decrease in the quality of their night vision. Rarely is this a significant decrease.

The chance of reduced correctable (with glasses) vision (greater than two eye chart lines of vision) is 0.5-2.0%. It is highest in myopic corrections above -7.00 diopters and hyperopic corrections above +4.00 diopters, and in cases of high astigmatism above 4.00 diopters. The chance of extreme or total loss of vision is exceedingly low with LASIK. The potential causes are severe infections, corneal scarring, optic nerve or blood vessel damage, or retinal detachment.

Rarely, following LASIK, the cornea progressively becomes thinner and steeper. This is called “ectasia” and is essentially the development of (or progression of) pre-existing but sub-clinical “keratoconus”. If this occurs, patients must wear gas permeable contact lenses or undergo additional surgery such as Intacs or corneal transplantation.

Additional Post-Operative Complications:
Material under the flap - usually of no consequence but rarely may have to be rinsed from underneath the flap. Dislocated flap or macrofolds in the flap. The flaps may need to be lifted and repositioned. Epithelial ingrowth is growth of the corneal surface epithelial cells beneath the flap. This requires lifting the flap and removing the epithelium. Melting of the cornea from epithelial in-growth is rare but if occurs can be a serious problem. In-growth may require suturing of the flap if it reoccurs. Sterile white blood cell infiltration can occur beneath the flap (DLK or CTK). This is treated by increasing the frequency of the use of your topical cortisone drops. Occasionally the flap must be lifted to help treat DLK. Sometimes this inflammation can cause a poor visual result.

There are other possible complications and side effects which are not mentioned because of their extreme rarity. Fortunately, refractive surgery procedures are safe and effective and complications are rare. However, like any operation, problems can occur and patients must always weigh the risk and the benefits before undergoing surgery.
1. Dr. Mandel uses a precise instrument called a “microkeratome” or the Intralase FS laser to create a thin flap at the top of your cornea which is lifted up, but remains attached at one side.

2. The excimer laser, already programmed to correct your degree of nearsightedness, farsightedness and/or astigmatism removes a microscopic layer of cornea. This part of the procedure takes between a few seconds and approximately one minute, depending upon your level of correction.

3. The corneal flap is put back into place and, because of its natural bonding properties, healing starts immediately. No stitches are required. Altogether, LASIK is less than 6 minutes per eye.

As always, if you have any questions regarding your care, call us at:
1-877-210-2020  www.optimaeye.com