LASIK refractive surgery on the Cornea are of varied types and expensive. It is performed on healthy eyes and hence patient expectation is generally very high. LASIK Laser is one of the most popular technique for the correction of refractive errors. However a proper patient selection is of vital importance in accomplishing optimal visual out come. The patient is selected to undergo LASIK on the basis of proper Ophthalmic screening and personal requirements.

Basic Selection Criteria

A detailed history which should include assessment of lifestyle and expectation. People taking abrupt decision influenced by friends, media,internet and who have unrealistic expectation should not be encourage to undergo LASIK Laser. They should undergo a thorough counselling. Minimal age should be 18 years. Refractive status should be stable for at least a year. Obtain a complete spectacles and contact lens history. Yearly soft contact lenses must be removed 2 weeks prior to the procedure. Toric and RGP contact lenses 3 weeks. For clinical assessment the soft lenses should be removed 3 days and RGP lens 7 days. Keratometry, topography and Pachymetry should ideally be repeated a day before the surgical.

Clinical assessment methodology: Vision from distance and near assessed in each eye with and without spectacles and with pin hole. Cycloplegic refraction with Cyclopentolate or homatropine is performed and the objective retinoscopy has to match subjective wet and dry acceptances. Auto refractive reading are not to be used. In Presbyopic age discuss and explain the need for near vision spectacles.

A detailed examination of the eye should be carried out using a Slit Lamp Biomicroscope. Any corneal opacities, Dystrophies and Herpes Keratitis lesions, should be ruled out. Corneal sensations should be assessed. Meibomeitis and lid abnormalities must be examined. Pupil must be well dilated and an indirect Ophthalmoscopy must be carried out to rule out any retinal holes or breaks. If Retinal holes or breaks are detected , they have to be sealed with barrage Laser. LASIK Laser can be performed 30 days after the barrage Laser seals the hole or the break. The pupillary diameter is measured for far and near . The optical zone must be larger than the mesopic pupil size. Schimers tests to be performed to rule out dry eyes. Keratoconus and ectatic corneal disorders are to be ruled out. Pachymetry and Topography are mandatory. Topography machines have in built software to detect Keratoconus, form fruste Keratoconus and also posterior Keratocouns or posterior float of the cornea.

Indication of LASIK

The most common indication for LASIK surgery is myopia, although it is being increasingly used to treat Hypermetropia and astigmatism. Other indications for LASIK are anisometropia, induced refractive errors after surgical procedures such as penetrating Keratoplasty, radial Keratotomy or Cataract surgery. LASIK is also used to treat Presbyopia.

Myopia

LASIK has been used to treat myopia ranging from 1.00D to 29.00 D,in past. But the increases in incidence of iatrogenic Keratectasia forced all LASIK surgeons to be more cautious and limit LASIK in myopic eyes in the range of -12 to -15 Diopter. This again depends on the central Pachymetry. If Pachymetry is below 500 then it cannot be performed. Take care to see that residual stromal bed of 300 is left behind after ablation.

Hypermetropia

LASIK can be used to correct hypermetropia of + 0.50 D to +8.00D.Hypermetropic Lasik results are more predictable if the correction is below +4.00 D.

Astigmatism

LASIK has been used to treat myopic and hyper metropic astigmatism ranging from -/+0.50 to -/+8.00 . New LASIK machines give predictable results till astigmatism of -/+6.00 D. In eyes with mixed astigmatism it may not be possible to correct the entire error in a single ablation and the refractive error may be segregated into 2 components.

Contraindications of LASIK patients includes absolute and relative contraindications

Absolute Contraindications

Conditions such as ectatic corneal diseases like Keratoconus, Terriens and pellucid marginal degenerations may be aggravated by LASIK and lead to severe ectasia and decreases the vision. LASIK should also not be performed in form fruste Keratoconus or sub clinical cases of Keratoconus. Patients with thin cornea of thickness less than < 490mm should not undergo LASIK since there is not enough cornea available for ablation and correct the refractive error. It will lead to ectasia and associated problems. The posterior corneal elevation before LASIK should be less than 40mm. This is important to
avoid occurrence of posterior ectasia of cornea.

Orbscan in a case of inferior corneal steepening

Orbscan showing posterior corneal elevation >40um

Presence of active corneal pathology and severe ocular surface diseases like Stevens Johnsons Syndrome and Ocular cicatrical pemphigoid are absolute contrdications for LASIK. LASIK should not be performed in cases of glaucoma either known previously or diagnosed immediately prior to LASIK surgery, as during the suction ring application the intra Ocular pressure raises to greater than 60mm of Hg, which may lead to further damage to optic nerve and hence loss of vision.

During pregnancy and Lactation, LASIK is not predictable because of changes in corneal hydration and refraction and hence it should not be performed.

Relative Contraindications

Patients on certain medications like oral or topical steroids or taking hormonal replacement therapy are likely to have delayed healing which may interfere with the result of LASIK. These patients should have a detailed discussion and refrained from performing LASIK.

Patients with disorders like diabetes, collagen vascular diseases, auto immune or immuno deficiency diseases, patients with history of keloid formation or in patients with a tendency to form scars are likely to lead to unpredictable results and are also not good candidates for LASIK. Patients with any previous history of herpes simplex or Zoster in the eye may not be operated since these may be reactivated by LASIK.

Active Ocular infection or inflammation like conjunctivitis and scleritis is a contradiction for LASIK unless these conditions are properly cured before LASIK. Local diseases like blepharitis, meibomiitis severe atrophic diseases and a poor ocular surface which are likely to lead to tear film instability after LASIK should not be operated.

LASIK severe should be preferably avoided in monocular patients, severe dry eye, sunken eye, and a pupil size larger than optical zone for the Laser ablation. Systemic or ocular vascular diseases are some of the other relative contradictions.

In blepharophimosis and narrow palpabral fissure LASIK may be difficult to perform with the currently available micro keratomes. In them flap making can be performed by Femto second Laser.

LASIK may be contradicted in certain occupations like armed force, fighter pilots and railways. These have certain restrictions and regulations which should be discussed with the patient before performing LASIK.

Patient indulging in contact sport or athletes or scuba drivers should be explained the risk of flap dehiscence or replacement and also rupture to globe from a minimal trauma. Hence these patients can return to the work or sport only after a minimal waiting period of one month after performing LASIK.

Patients whose occupation is dependent on the quality of the visual function based on contrast sensitivity and glare should be explained about these drawbacks after LASIK. These patients may find it more difficult than usual to see in very dim light, rain, fog or experience excessive glare from oncoming vehicles at night. Visual performance may be worsened by a large mesopic pupillary size also.

Detailed preoperative work up, proper counselling and adherence to scientific principals are imperative to ensure a successful outcome.