EYE FUNCTIONS & REFRACTIVE ERRORS

Eyes are the most important parts of our body. The eye enables us to perceive everyday objects and allows us to do tasks with proper coordination. Light enters the eye through the Cornea (a clear curved layer in front of eye) and helps to focus the light on light sensitive cells at the back of the eye called Retina. Nerves at the back of the retina form an optic nerve which is connected to the brain. This optic nerve sends a message from the eye to the brain, where an image or color is understood by the brain.

Due to imperfections in the focusing mechanism of the eye, the light coming into the eye is not properly focused onto the retina, thus causing the vision to become blurred or distorted. This condition is called as a Refractive Error.

The most common refractive errors are:

a) **Myopia** (-) : Also termed as shortsightedness, is a blurred vision condition, where the focusing mechanism of the eye brings the light to focus in front of the retina. In myopia condition the eyeball is elongated in shape. A patient with a Myopia condition often complains of being unable to view distant objects very clearly.

b) **Hyperopia** (+) : Also termed as farsightedness, is a blurred vision condition, where the focusing mechanism of the eye brings the light to focus behind the retina. In hyperopia condition the eyeball is short or small in shape. A patient with a Hyperopia condition often complains of being unable to view nearby objects very clearly.

c) **Astigmatism** (-/+): Astigmatism condition causes a vision to blurred or distorted at all distances (far or near). This condition arises due to irregularly shaped cornea. Because of the irregularly shaped cornea the light cannot focus at a single point or focus on the cornea. Patients with Astigmatism are unable to focus sharply at distant or nearby objects.

d) **Presbyopia** : An eye condition which is commonly associated due to aging (old age). In this condition the eye shows a reduced ability to focus on nearby or far objects. Common symptoms associated with Presbyopia patients are difficulty in reading fine print especially in low-light conditions, eyestrain while reading, being unable to focus on objects while moving, etc.

One way to treat presbyopia is with the use of corrective lenses. The corrective lenses include using one lens to view nearby objects and the other to help view distant/ far objects. This method of using two type of lenses is also called Monovision.

Newer surgical procedure like LASIK provide solution to those patients who do not wish to wear glasses or contact lenses. LASIK is an advanced and widely used surgical procedure to correct refractive errors like Myopia, Hyperopia, Astigmatism, Presbyopia in the human eye.

An implantable contact lens (ICL) or Intra Ocular Lens (IOL) is a miniature contact lens that is implanted into the eye to correct focusing errors. Implantable Contact Lens eye surgery can be undertaken by our highly experienced surgeons, often in cases where laser vision correction may not be appropriate. For a minority of patients an intraocular lens implant may be the most appropriate solution for vision enhancement as not everyone is eligible for laser
vision correction. This may either be because of extreme refractive error (short sight, long sight and/or astigmatism), unusual corneal findings or other eye health concerns (e.g. cataract).