Summary

Astigmatism is the condition of refraction of the eye wherein a point of focus of light cannot be formed upon the retina, but is refracted into two focal lines separated from each other by focal interval.

Clinically detectable refractive astigmatism reportedly is present in as many as 9 out of 10 eyes. However, refractive astigmatism in most of these eyes would not be clinically significant.

Astigmatism is due to corneal, lenticular causes or due to obliquity of eye elements as in high myopia with posterior staphyloma. It may be regular or irregular, regular type is classified into simple, compound and mixed astigmatism.

Irregular astigmatism can occur as a result of trauma, keratoconus, corneal disease, corneal infection and others. Sometimes it is the result of surgical procedures, such as pterigyum removal, penetrating keratoplasty (PK), and cataract extraction.

Clinically, astigmatism is presented by diminution of vision, blurring, discomfort and headache. Diagnosis of

astigmatism can be done by ophthalamoscopy, retinoscopy, keratometry or refractometry either automated or conventional.

Recent techniques in diagnosis also include corneal topography, tomography and pentacam which can map the surface curvature of the cornea; the procedure is carried out in seconds and is completely painless.

Astigmatism is corrected either by optical or surgical methods. Optical methods include eye glasses with cylindrical or spherocylindrical lenses and contact lenses either soft toric, hard or rigid gas permeable contact lenses.

Surgical techniques to correct astigmatism can be divided into three major categories: Incisional, lamellar and intraocular. Incisional methods for correction of astigmatism include astigmatic keratotomy (AK), wedge resection, limbal relaxing incisions (LRIs), lamellar methods include photoastigmatic refractive keratectomy (PARK), laser-assisted in situ keratomileusis (LASIK) and intraocular methods include toric intraocular lens implantation either in phakic or aphakic eyes.

More recently, excimer laser photoastigmatic refractive keratectomy (PARK), conventional LASIK, IntraLase, LASEK, Epi-LASIK techniques and wavefront-guided LASIK have been used to reduce astigmatism.

Irregular astigmatism can be surgically treated by topographically guided corneal ablation. In cases of high but stable corneal irregular astigmatism, treatment by superficial anterior lamellar keratoplasty (SALK) with or without additional topographically guided ablation can be done. In treating high and unstable corneal irregular astigmatism, ICRS, penetrating keratoplasty (PK), or deep anterior lamellar keratoplasty (DALK) with or without the use of the laser (LA-DALK) are the best procedures.