

## Astigmatism

Astigmatism is an optical condition where the focus of an image entering the eye one plane or angle is different from the focus of the same image entering from another angle. This could mean, for example, that the clarity of vertical planes is less clear than those from horizontal planes.

The most common cause of astigmatism is from the cornea (the clear "window" or dome of the eye covering the pupil and iris). An astigmatic cornea is one that is not perfectly spherical but rather shaped more like that of a football (or the back of a spoon). A spherical (non-astigmatic or anastigmatic) cornea is more like the shape of a basketball.

Uncorrected astigmatism affects both near and distant vision, resulting in round lights appearing more oval or ellipsoidal, based on the amount of astigmatism present. The direction in which the football shaped cornea is angled determines the direction of the oval-appearing distortion that one sees.

Some astigmatism is genetic and runs in families, and some can occur as a natural aging process (the cornea is made of protein and our body's protein loses elasticity as we age, accounting for both sagging body parts and our sagging corneas). Some astigmatism can result from trauma or surgery. Astigmatism correction can usually be accomplished with glasses, contacts or refractive surgery.

Astigmatism can also be corrected during cataract surgery with toric intraocular lenses (IOLs) placed inside the eye. This toric correction can be on single vision IOLs as well as various multifocal IOLs. Special devices can help measure the eye to know where to position the IOLs to correct astigmatism, allowing the patient to be relatively spectacle-free after cataract surgery.