

## Abberation and Eye

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### Short Communication

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### Introduction

Due to the ocular deformity of the structure of the eye, Aberration is being created. Most of the time, it is not considerable. The meaning of Aberration is "NO PERFECT". Due to anatomical considerations and ocular structure positions, different types of aberrations are created [1-3].

### Diffraction of light

Here, pupillary diameter is a considerable factor. When the light is focused at the retina that must be point focus in case of emmetropia. But according to study, it has been shown that some amount of black and white patches which is called Airy Disc is created. It has no point focus. The diameter of the pupil is 2 mm and the size of the Airy disc is 0.01 mm. This is inherent characteristics. If pupil diameter is less than 2 mm, then diffraction can occur.

### Chromatic Aberration

When the white light is passing through the prism, then this white light is dispersed into seven lights and here, red light is focused at more distance and violet light is focused at nearest to the prism. This condition is not considerable because white light must be focused at a particular point, not at different points. This condition is called Chromatic Aberration. This also creates chromatic

diffraction in magnification. Here, unequal refraction is also created.

### Spherical Aberration

The main concept of Spherical Aberration is when the rays are passing through the aperture, and then peripheral rays are converged more compared to central rays. But due to peculiar structure of the eye, it is being eliminated. Because, crystalline lens have greater density and greater curvature at the centre. It can be eliminated by meniscus lens or aplanatic lens. Meniscus lens – If base curve is 6 D, then it will be deep meniscus and if base curve is 1.25 D, then it will be Periscopic meniscus. In aplanatic lens, curvature gradually decreases towards the periphery.

### Decentration

The main concept of decentration is, centre of curvature of cornea do not coincide with the centre of curvature of two surface of crystalline lens. Centre of cornea is 0.25 mm below compared to crystalline lens.

### Peripheral Aberration

This phenomenon is composed of COMA, Oblique Astigmatism and Distortion. But due to retinal function and peculiar structure of the eye it is ignorable.

## References

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2. Troy E Fannin, Theodore P Grosvenor (1996) Clinical Optics.
3. William J Benjamin (2006) Borish's Clinical Refraction.

