جامعة المستقبل

كلية التقنيات الصحية والطبية

قسم تقنيات البصريات

Second Stage 2024-2025

REFRACTIVE ERRORS

Lecture Title

Myopia

Lecture Number: 8 / course 1

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OPTOMETRIST

MYOPIA

(also known as shortsightedness or nearsightedness)

People with myopia (sometimes called "myopes") can not see far away, but depending on the amount of myopia they have, their near vision might be good.

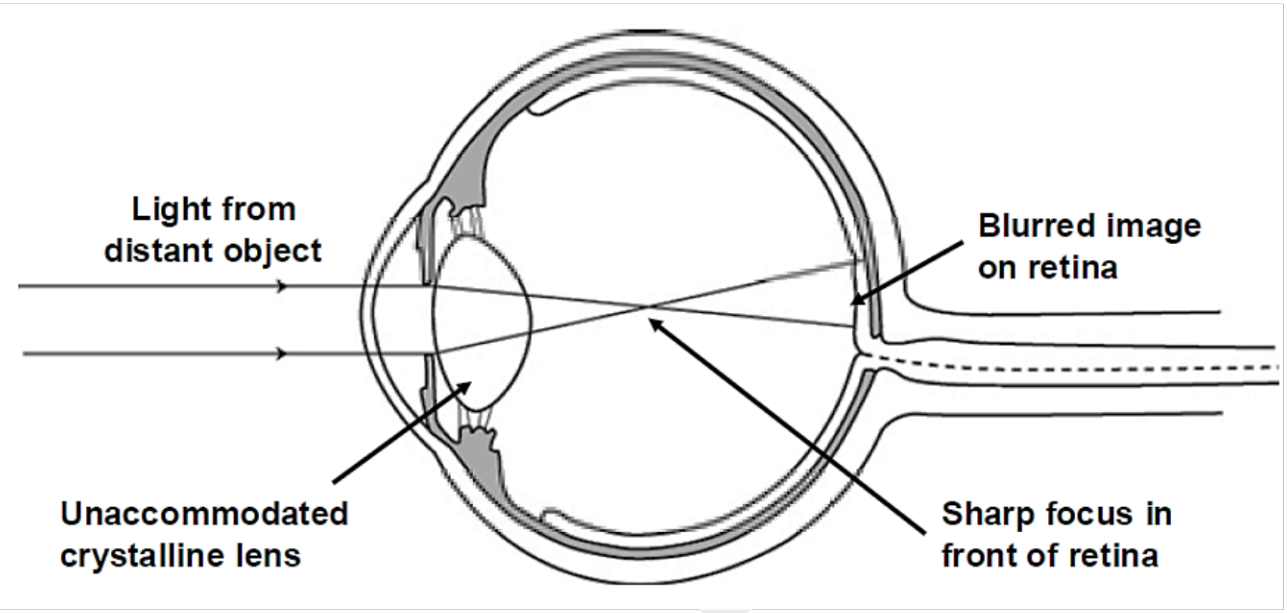

Figure*: A myopic eye - light rays from a distant object focus in front of the retina*

Causes of Myopia

❖ **Based on Anatomical Features**

1. Axial Myopia

- **It is due to relatively long axial length.**
- **1 mm axial length lengthening will cause -3.00 D of myopia.**

2. Curvature Myopia

- **It is due to the decreased radius of curvature of the refractive surfaces, i.e. cornea and lens.**
- **1 mm steepening will cause -6.00 D of myopia.**
- **It is found in keratoconus, lenticonus and megalocornea**

3. Index Myopia

- It is due to increase in refractive index of the lens nucleus which occurs in nuclear sclerosis.

4. Displacement of Refractive Element

- It is due to forward displacement of lens.

Symptoms of Myopia اعراض قصر البصر

- A person with myopia has blurry distance vision, also have blurry near vision (but their distance vision will always be worse).
- Eye strain or asthenopia
- Exophoria or Latent divergent squint
- Floaters and/or flashes of light in front of the eyes
- Frequent Eye Rubbing
- Rapid Progression in Childhood or Adolescence
- Photophobia and impaired vision at night.

Signs of Myopia علامات قصر البصر

- Prominent eyes
- Large pupil and deep anterior chamber

Correction of myopia

- **Eyeglasses: Prescription glasses with minus (concave) spherical lenses.**

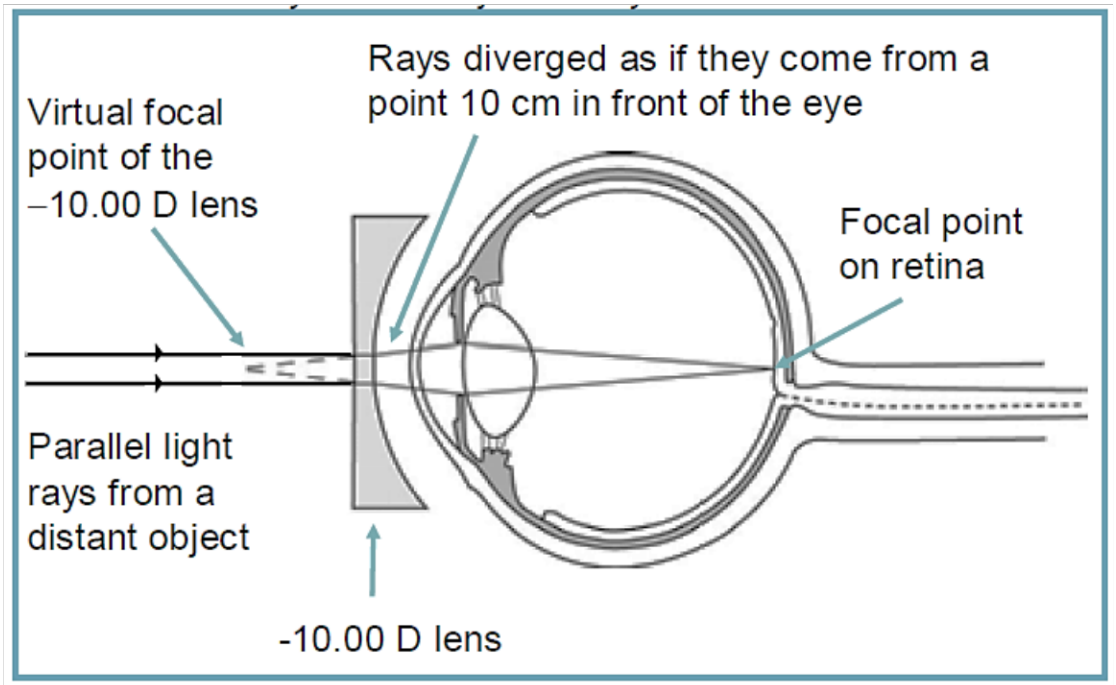

Figure*: You can see that the –10.00 D lens diverges the light rays before they reach the eye – as if they were coming from a point 10 cm in front of the eye.*

- **Contact Lenses: Soft or rigid gas-permeable contact lenses can be used to correct myopia without the need for glasses.**

Refractive Surgery:

- **LASIK (Laser-Assisted In Situ Keratomileusis): This surgery reshapes the cornea using a laser to correct refractive errors, including myopia.**
- **PRK (Photorefractive Keratectomy): Similar to LASIK, but without creating a flap on the cornea. It is often recommended for individuals with thinner corneas.**

- **SMILE (Small Incision Lenticule Extraction): A minimally invasive form of refractive surgery that removes a small piece of tissue from the cornea to correct vision.**
- **Orthokeratology (Ortho-K): This involves wearing specially designed gas-permeable contact lenses overnight. They reshape the cornea temporarily, providing clear vision during the day.**
- **Bifocal or Progressive Eyeglasses: These lenses have different zones for near and distance vision correction. They can be used for individuals with myopia and presbyopia.**

Diseases Associated with Myopia

- **Retinal Detachment: High myopia increases the risk of retinal detachment, as the eye's elongation can stretch and thin the retina.**
- **Myopic Macular Degeneration: In severe cases, the retina and surrounding tissue can degenerate, causing vision loss in the central part of the retina (the macula).**
- **Glaucoma: Myopia is a risk factor for open-angle glaucoma, where increased intraocular pressure damages the optic nerve.**
- **Cataracts: People with high myopia have an increased likelihood of developing cataracts, especially posterior subcapsular cataracts.**
- **Choroidal Neovascularization: In high myopia, abnormal blood vessels can grow under the retina, leading to vision loss if left untreated.**