THE AGING EYE
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OCULAR ANATOMY

LENS

RETINA

ANGLE/TRABECULAR MESHWORK

VITREOUS

FOVEA

OPTIC NERVE
Visual Acuity
What Does 20/20 mean?

Visual Acuity is expressed as a fraction:

The distance at which the patient reads the chart. The distance at which someone with normal vision reads the same line of the chart.

Progression of Visual Acuity:
20/20, 20 /400, 10/200, CF, HM, LP, NLP

Legal Blindness 20/200 (BCVA) or 20 degree field
REFRACTIVE ERROR

**MYOPIA (NEARSIGHTEDNESS)**

- Eye too powerful or too big
- Images focus in front of retina
- Visual effects
  - Distance blurry
  - Near usually clear
- Correction
  - 30% of vision correction population
  - Reduce power of the eye
  - Minus lenses
    - Image moves back to retina
    - Spectacles or CLs
  - Refractive surgery
REFRACTIVE ERROR

HYPEROPIA (FARSIGHTEDNESS)

- Eye not powerful enough or too small
- Images focus behind retina

Visual effects
- Distance: Usually clear
- Near: Usually clear
- Depends on age & degree of hyperopia

Correction
- Increase power of eye
- Eye accommodates for distance & near vision
- Strain may cause symptoms
- Plus lenses: Image moves forward to retina
  Spectacles or CLs

- Pre-presbyope
- Presbyope
  Blurry
  Blurry

crystalline lens
focus
retina
cornea
pupil
REFRACTIVE ERROR

ASTIGMATISM

• Cornea shape usually responsible
  – Normal shape ≈ basketball
  – Astigmatic shape ≈ football

• Uncorrected, astigmatism causes a basketball to look like a football

• Correction:
  – Cylinder lenses
  – Usually combined with myopia/hyperopia correction
  – Spectacles or CLs
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PRESBYOPIA

- "Old vision" (Greek)
- Normal aging process
- Near objects held farther away
- Noticeable near age 40
How to Read your Optical Rx

- OD -2.75 – 3.00 x 125
- OS +1.75 -2.00  x 35
- OU Add + 2.50  65/62  PAL

1st number is the amount of spherical correction, myopia is negative, hyperopia is positive.

2nd number is the amount of astigmatism.

3rd number is the alignment of the astigmatism from 0 to 180 degrees.

Add is the additional power added to the distance Rx for reading.
Tear Layer & Lids

- Oil
- Aqueous
- Mucin
- Epithelium
Blepharitis
Lid Complications of Blepharitis
Basal Cell Carcinoma
Dermatochalsis
Ptosis
Horner's syndrome is the combination of drooping of the eye lids (ptosis) and constriction of the pupil (miosis), sometimes accompanied by decreased sweating of the face on the same side; It indicates a problem with the sympathetic nervous system. A sudden onset requires medical attention.
Myasthenia Gravis

- Pupils equal

Certain muscles such as those that control eye and eyelid movement, facial expression, chewing, talking, and swallowing are often, but not always, involved in the disorder. The muscles that control breathing and neck and limb movements may also be affected.
Entropion
Ectropion
Conjunctiva

1. Bulbar
2. Forniceal
3. Palpebral
   - Marginal
   - Tarsal
   - Orbital
Sub Conjunctival Hemorrhage
Conjunctivitis
Allergic reaction to eye medication
Scleritis

A SERIOUS inflammatory disease affecting the sclera (the white of the eye). Often associated with rheumatoid arthritis. Pain associated with eye movement is a medical emergency.
Pterygium
Malignant melanoma
Small “sore” was diagnosed as squamous cell cancer.
Cornea

- Although the cornea is clear and seems to lack substance, it is actually a highly organized group of cells and proteins. Unlike most tissues in the body, the cornea contains no blood vessels to nourish or protect it against infection. Instead, the cornea receives its nourishment from the tears and aqueous humor that fills the chamber behind it. The cornea must remain transparent to refract light properly, and the presence of even small blood vessels can interfere with this process. To see well, all layers of the cornea must be free of any cloudy or opaque areas.
Arcus (Senilis)
Dry Eye Syndrome
Corneal Whorl
Corneal Stain
Herpes Zoster with Ophthalmic Manifestations
Herpes Simplex
Corneal Dystrophy
Fuchs’ Dystrophy
Corneal Ectasia (Keratoconus)
Complications from Refractive Surgery
CTL & INTACS
Cosmetic Contact Lens
Contact Lens Case !!
Pseudomonas Ulcer
Double Vision (Diplopia)
Pupil Blocking contact lens
“Irritation in Left Eye”

42 year old female presented with a cc of irritation OS for a month.

Ocular Hx is significant for recurrent retinal detachments OS.

Visual Acuity:
OD 20/25
OS HM
IOP OD 15
OS 38
Exposed suture from retinal surgery
Crystalline Lens
Cataract
Cataract
Posterior Subcapsular Cataract
IOL
Tell your eye surgeon if you take Flomax!

Intraoperative floppy iris syndrome (IFIS) is a complication that may occur during cataract extraction in certain patients. This syndrome is characterized by a flaccid iris which billows in response to ordinary intraocular fluid currents, a propensity for this floppy iris to prolapse towards the area of cataract extraction during surgery, and associated with Flomax (tamsulosin), a medication widely prescribed for urinary symptoms associated with benign prostatic hyperplasia.
Intraoperative floppy iris syndrome

Iris Repair Floppy Iris Synd

Prosthetic CTL to reduce photophobia
Subluxated Lens
Aphakia
The vitreous is a thick, transparent substance that fills the center of the eye. It is composed mainly of water and comprises about 2/3 of the eye's volume, giving it form and shape. The viscous properties of the vitreous allow the eye to return to its normal shape if compressed.
Posterior Vitreous Detachment (PVD)

PVD is rare in people under the age of 40 years, and increases with age to 86% in the 90's. People with myopia greater than 6 diopters are at higher risk of PVD at all ages.

Symptoms

Flashes of light (photopsia)
A sudden dramatic increase in the number of floaters
A ring of floaters or web just to the temporal side of the central vision

As a posterior vitreous detachment proceeds, adherent vitreous may pull on the retina. Vitreous traction may stimulate the retina, with resultant flashes.
Vitreous Hemorrhage
Normal Retina
HTN Retinopathy

- High blood pressure can damage blood vessels in the retina. The higher the blood pressure and the longer it has been high, the more severe the damage is likely to be.
Branch Retinal Artery Occlusion

Sudden painless partial loss of vision in one eye resulting from a plaque, most likely from the carotid artery.

Indicates a medical emergency and should be evaluated immediately.
Central Retinal Artery Occlusion

- **Central Retinal Artery Occlusion**
  Patients with central retinal artery occlusion lose vision suddenly. Unfortunately the visual loss in central retinal artery occlusion is usually irreversible although there may be some improvement over time.

- There is no good treatment of central retinal artery occlusion. Lowering the eye pressure or breathing into a bag have been advocated but without success.
Optic Nerve Swelling (papilledema)

Right Eye

Left Eye
Non Proliferative Diabetic Retinopathy
Proliferative Diabetic Retinopathy
Treatment for Diabetic Retinopathy
Malignant Melanoma
Retinal Detachment
GLAUCOMA

Angle Closure Glaucoma

Chronic Open Angle Glaucoma
Optic Atrophy

- Nonarteritic Ischemic Optic Neuropathy
- Developing Soon After Use of Sildenafil
- Medication for ED
Maculae Degeneration

DRY ARMD

WET ARMD
Thanks for your Attention
Any Questions?