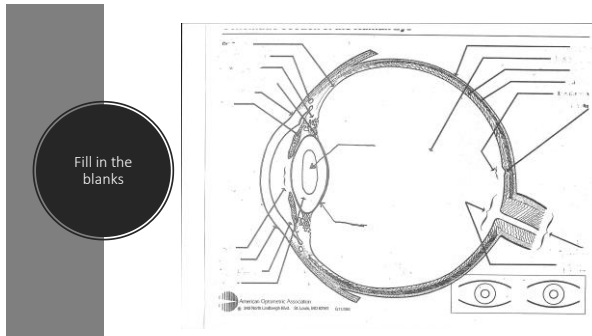


1

WARNING!!!!

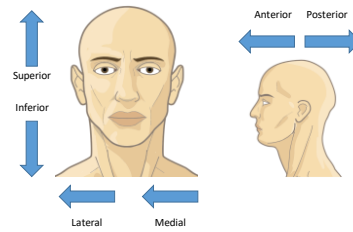
SOME PICTURES ARE VERY GRAPHIC

2



3

Anatomy Terminology



4

Basic Medical Terminology



ROOT WORD



PREFIXES



SUFFIXES

5

Basic Medical Terminology

Retinopathy

Conjunctivitis

Hyperopia

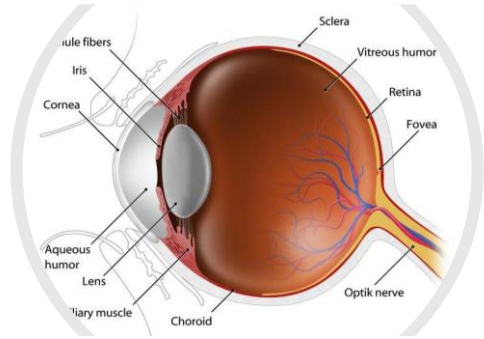
Intraocular

6

Basic Medical Terminology

| Prefix | Root | Suffix |
|--------|------------|--------|
| | retino | pathy |
| | conjunctiv | itis |
| hyper | | opia |
| intra | ocular | |

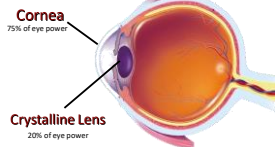
7



8

The Visual System

There are two main refractive bodies in the human eye...



9

Objectives

- Discuss the anatomy and Physiology of the
 - Tear film
 - Lids
 - Cornea
 - Iris
 - Ciliary Body
 - Crystalline Lens and structure
 - Vitreous
 - Retina
 - Cranial Nerves
 - Diseases associated with the eye



10

Why anatomy is important!

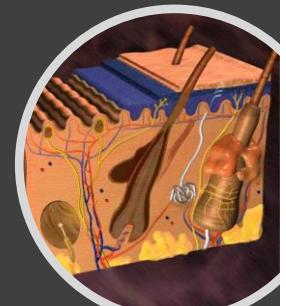
- Anatomy: Ocular and Human
- Terminology
- History Taking
- Examination Documentation
 - CC
 - Symptoms
 - Slit lamp
 - External / Internal
- Ophthalmic Patient Services and Education
- Ophthalmic Terminology
- Medical Ethics & Legal Issues
- The Medical Note/Records



11

The Eyelid

- 7 Layers of the eyelids
 1. Epidermis – Skin - thinnest layer
 2. Subcutaneous connective tissue
 3. Striated Muscle
 4. Sub-muscular cone
 Active tissue
 5. Tarsal plate or fibrous layer – thickest layer
 6. Smooth muscle
 7. Conjunctiva (Bulbar/Palpebral)




12



13

Eyebrows and Eyelashes

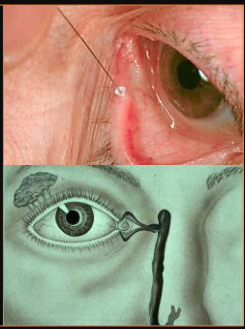
- Eyebrows
 - Thickened ridge of skin with short hairs
 - Diverts perspiration
- Eyelashes
 - Also protects
 - Sebaceous glands at base of each lash are called Glands of Zeis which produce a lubricating fluid
 - Fluid can harden and clog the gland, producing a stye or painless chalazion. If painful and infected it is called an external hordeolum



14

Lacrimal Apparatus

Sometimes a person cannot produce natural tears that they might need some punctal plugs.




16

Eyelid Positions

Disease:


- Trichiasis ... eye lashes turned in
- Entropion ... lid turned in no drain
- Ectropion ... lid turned out drain
- Tear deficiency / instability
- Trigeminal nerve (5th CN) irritation
- Oculomotor nerve (3rd CN) levator
- Facial nerve (7th CN) orbicularis muscle
- Lagophthalmus ... lid won't close



17

Lacrimal Pump


- Pump Action
 - Lids
 - Lateral/medial
 - Muscles
 - Disease
 - Punctum
 - Caniculi
- Lacrimal Sac
- Nasolacrimal Duct
- Facial Nerve Palsy (7th CN)



18

Hypersecretion = Pump Failure

- Crocodile-tears Syndrome
- Gustatory Hyperlacrimation or Gustatory epiphora or Gustolacrimal reflex (could be congenital)
- Ocular Surface Irritation



The tear lake is really high

What is a normal tear lake measurement?

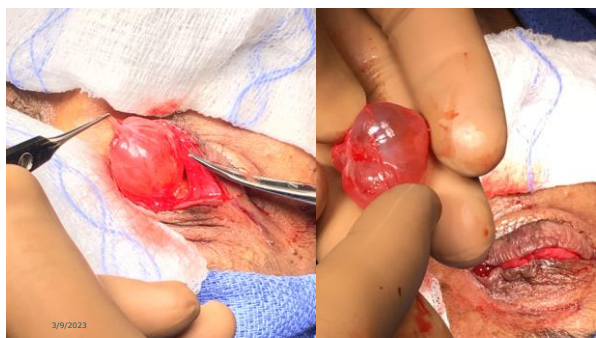
19



20

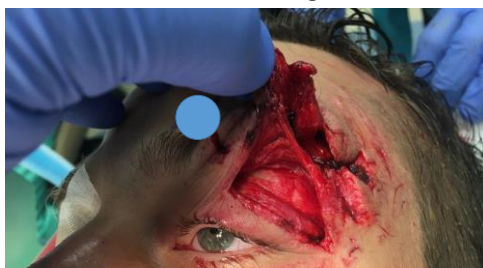


21



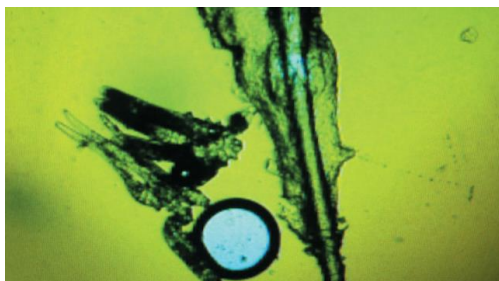
22

Trauma: Where and how things work!

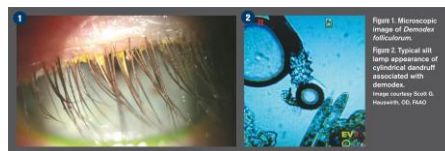


23

Demodex



24



Demodex mites are microscopic ectoparasites found in human skin. They are extremely common, and their rate of infestation increases with age. The life span of demodex outside the living body is very limited. Direct contact is thought to be required for transmission of the mites. The lifecycle of demodex from egg/molt to an adult is quite short and no longer than two to three weeks. The adult stage is less than a week, and this is when mating occurs.

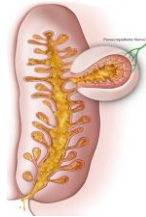
http://opentexttimes.modernmedicine.com/opentexttimes/news/what-s-all-craze-about-demodex/?utm_campaign=Sponsored+Resource+Content&utm_source=article_email&utm_medium=email&utm_content=27975804&hmc=c2ANqtz9RajCG6ARW9K6e4HSPG5W9_GFVzP1TVsmuZAgW95R2q3z20_X9FLMABARbczj1T-iaXgqWQRNAC_9411Uw&hm=27975804

25

Lipid Secretion: Meibomian Glands



Left: Transillumination of eyelid showing meibomian glands



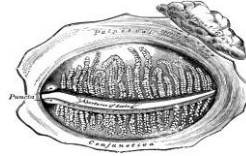
Right: Secretion of lipid at lid margin

- The lipid layer restricts evaporation to 5-10% of tear flow
 - Known as the protective layer of the tear film
 - Also helps lubricate

26

Lipid Secretion: Meibomian Glands

What eye is this?



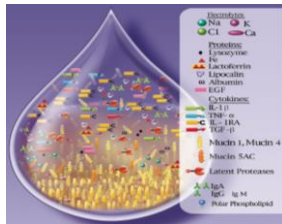
How does the lipid layer aid in contact lens wear?

27

Tear Anatomy

A complex mixture of proteins, mucins, and electrolytes coated by a lipid layer

- Antimicrobial proteins
- Growth factors & suppressors of inflammation
- Soluble mucin helps stabilize tear film
- **Electrolytes for proper osmolarity (295-300)**
 - pH slightly alkaline (7.4)



28

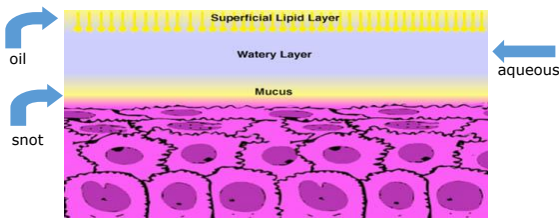
The Impact Of Tears On Vision

- Refractive Status
- Health of the Cornea, the most refractive surface of the eye
- Visual Acuity
- **Fluctuating vision**



29

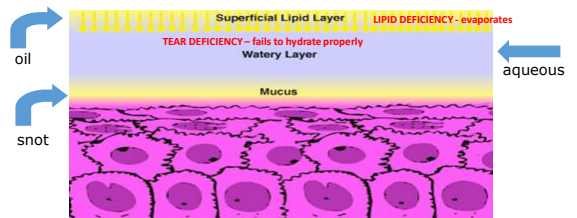
Lacrimal System: Tear Film Layers



What functions does each layer of the tear perform?
What are functions of tears?

30

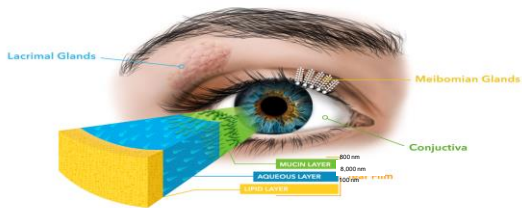
Lacrimal System: Tear Film Layers



What functions does each layer of the tear perform?
What are functions of tears?

31

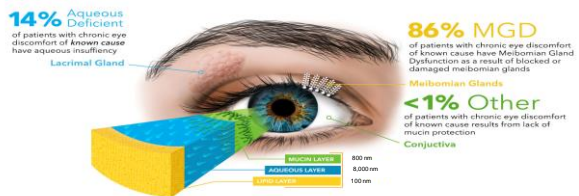
A Healthy Tear Film



A healthy tear film is comprised of 3 layers: Mucin, Aqueous, and Lipid

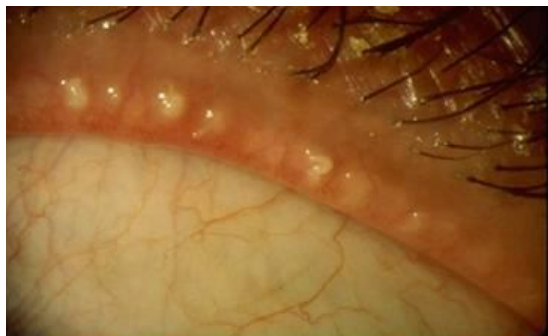
32

Two Primary Forms of Dry Eye

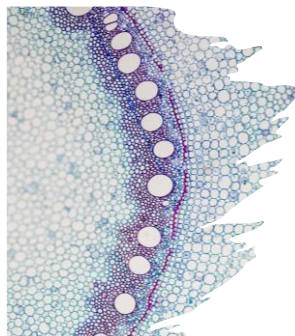


The two primary forms of dry eye are Evaporative Dry Eye, also known as Meibomian Gland Dysfunction or MGD and Aqueous Dry Eye. The majority of dry eye sufferers have MGD.

33



34

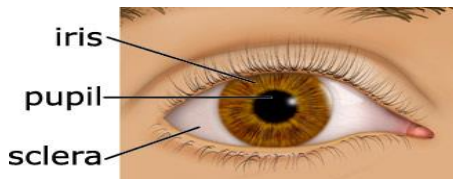


Mucus Layer

One key component of DED is a breakdown of the mucin layer that is responsible for converting the hydrophobic (**repels water**) corneal surface of the eye to one that is hydrophilic (**attracts water**). This allows the pre-corneal tear film (PCTF) to coat the surface of the eye filling in surface irregularities and providing optimal coverage

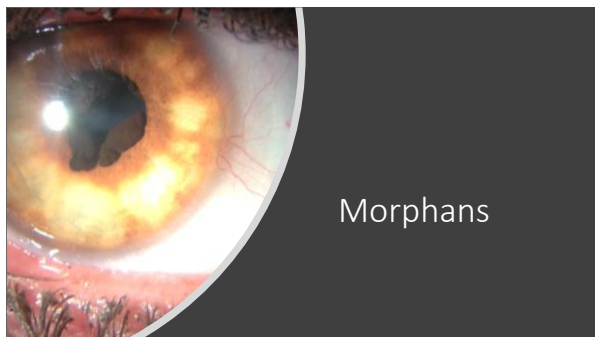
35

Anatomy



What function does the pupil have?

36



Morphans

37



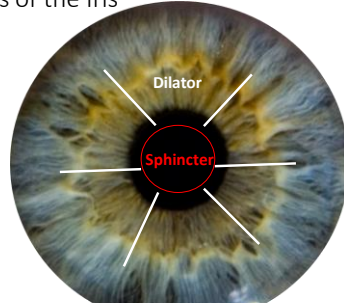
- White in color
- Primary function is protection
- Pierced posteriorly by the optic nerve
- Acts as insertion points for the six EOMs
- Junction between the cornea and sclera is called the Limbus

Sclera

What is the total power of the eye?

44

Muscles of the Iris



45

The Eye

- Anterior Segment
- Posterior Segment

46

Conjunctiva

- An epithelial membrane which covers the anterior sclera and continues to the back surfaces of the lids to form a conjunctival sac
- Has blood vessels which can burst and cause subconjunctival hemorrhage
- Three parts
 - Bulbar
 - Palpebral
 - Fornix - where bulbar and palpebral meet

Name the mucus producing cell?

47



48



Cornea

What is it called when blood vessels grow onto the cornea? **Neovascularization**

What happens when a patient gets a scar in their visual pathway? **Reduced visual acuity**

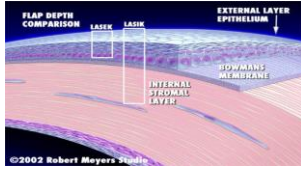
- Index of refraction is 1.37
- Approximately .5mm in thickness
- Transparent Organ (no blood vessels / avascular)
- Primary function is refraction of light rays
- Refractive power approx + 45.00 D

What is the crossover point for the nasal optic nerves?

49

Cornea

- Composed of 5 layers
 - Epithelium...24 hr healing
 - Outermost layer
 - 5 cell layers thick
 - Heals very quickly
 - Does not scar
 - Bowman's membrane- layer just under the epithelium NOTE: will scar
 - Stroma – middle tissue that forms 90% of the cornea
 - Descemet's membrane- thin elastic layer deep in the cornea
 - Endothelium - only one cell layer thick; lines undersurface of the cornea, where it regulates corneal water content

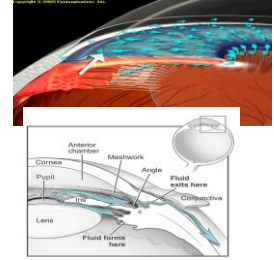


What cranial nerve is tied to corneal sensations?

50

Aqueous Humor

- Manufactured by ciliary body
- Characteristics:
 - Clear
 - Watery consistency (99% H₂O)
- Functions
 - Refraction of light
 - Intraocular Pressure (IOP)
 - Probably nourishes posterior surface of the cornea and the crystalline lens
- Flows from posterior chamber through the pupil into the anterior chamber

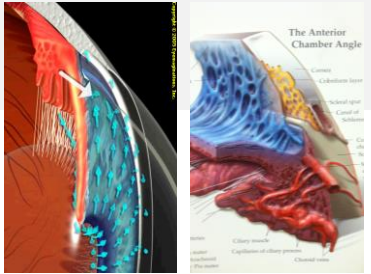


How does aqueous flow out of anterior chamber?

51

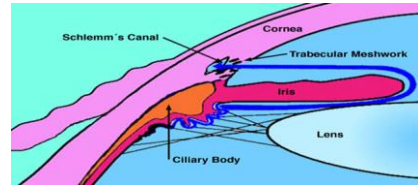
Aqueous Flow

- Glaucoma
- Selective Laser Trabeculotomy



52

Flow of Aqueous



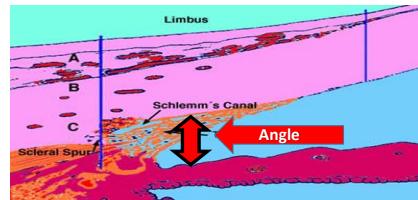
53

Trabecular Meshwork



54

Angle



55

Acute Angle-Closure Glaucoma

- Rapid onset
- Painful
- Very serious
- Can lead to permanent blindness
- Common in patients with high hyperopia and mature cataracts

56

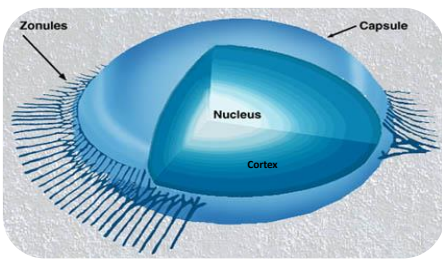
Crystalline Lens... approx 12-14 diopters of power

- Functions
 - Refraction of light
 - Accommodation
 - Focus adjustment of the eye
 - Presbyopia is the loss in accommodation
 - First noticed around age 40. Due to a loss in flexibility of the lens

Name the three main parts of the lens?

57

Crystalline Lens



58

Length of the Eye

The average axial length of an adult eye is about 23 mm. Some people have hyperopia because, in essence, their eye is too short (i.e., less than 23 mm long). As a rule of thumb, each millimeter of axial length amounts to approximately 3.00 diopters of refractive power.

The shape of the eye matters as well!

59

Crystalline Lens

- 3 things happen during accommodation:
 - Pupils constrict
 - Eyes converge
 - Lens gets thicker
- The crystalline lens contains a high degree of protein
 - Changes in the lens protein causes the lens to lose its transparency which is a condition termed "cataract"
 - Aphakia is the absence of a lens. It can be removed during cataract extraction

60

Iris/Pupil

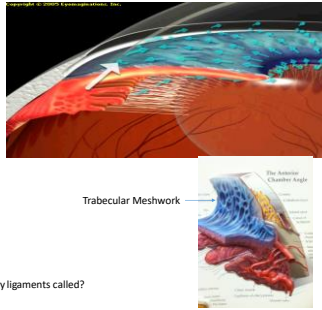
- Iris
 - Most anterior portion of the vascular layer
 - Gives the eye its color, i.e. blue eyes, brown eyes, etc.
 - Consists of blood vessels, pigment and muscle tissue
 - Regulates light
- Pupil
 - Smaller with age

What does the sphincter muscle control?

61

Ciliary Body

- Located near the base of the iris and posterior to it
- Composed of blood vessels and muscle fibers (ciliary muscle)
- Ciliary process produces aqueous

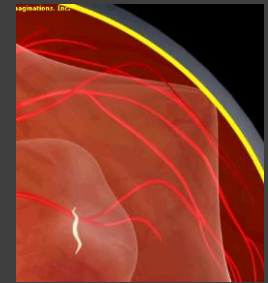


Ciliary body is attached to suspensory ligaments called?

62

Vitreous Chamber

- Functions:
 - Refraction of light
 - Internal support
- Is more solid when we are first born
- Spots in vision may be floaters in the vitreous



Post vitreous detachment occurs when the vitreous pulls away from the retina

63

Nerve Layer - Retina

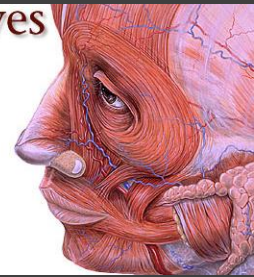
- Visual Receptors are Cones and Rods
 - **Cones**
 - Produce color vision
 - Give improved acuity
 - Used in day vision = "**Photopic**" = normal and high levels of illumination
 - **Rods...120 million**
 - Produce black and white vision
 - Function in dim light = "**Scotopic**" = low level of illumination
 - **Cones ... 6 million**
 - Used under **mesopic** vision = between scotopic and photopic
 - Both rods and cones are used.



64

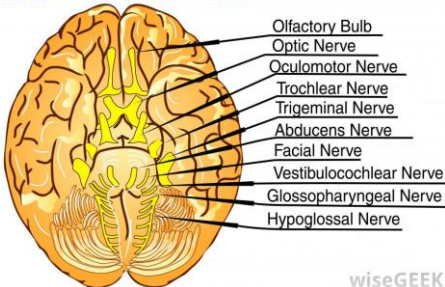
Cranial Nerves

- I Olfactory
- II Optic
- III Oculomotor
- IV Trochlear
- V Trigeminal
- VI Abducens
- VII Facial
- VIII Vestibulocochlear
- IX Glossopharyngeal
- X Vagus
- XI Accessory
- XII Hypoglossal



65

Cranial Nerves

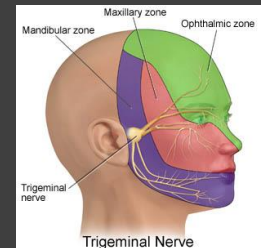


wiseGEEK

66

5th Cranial Nerve - Trigeminal

- Corneal sensitivity
- Lacrimal gland innervation



67

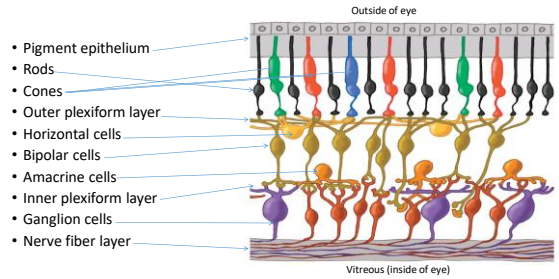
The retina (Cranial Nerve II)



The levator palpebrae raises the eyelid and is innervated by CN #?

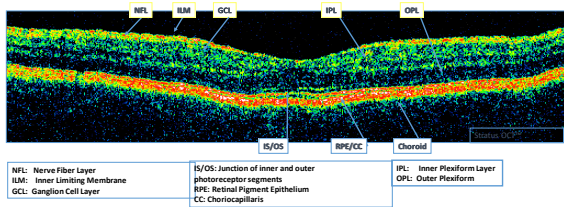
68

Retina – 10 layers



69

Identification of Retinal Layers

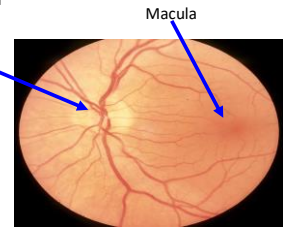


Cross-sectional image of live tissue; a virtual biopsy

70

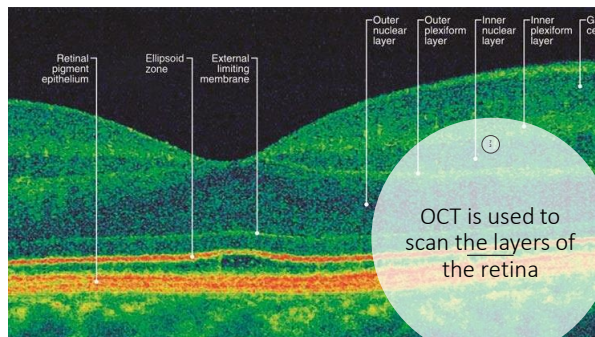
Nerve Layer - Retina

- Optic nerve head (optic disc)
- No receptors - physiological blind spot
- Point of exit of optic nerve
- Appears yellow compared to the orange retina

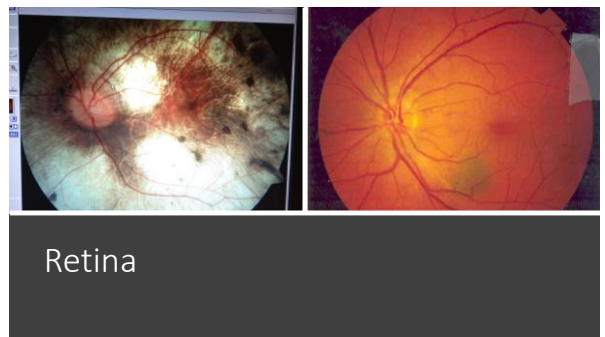


Posterior pole: Macular and Optic Nerve

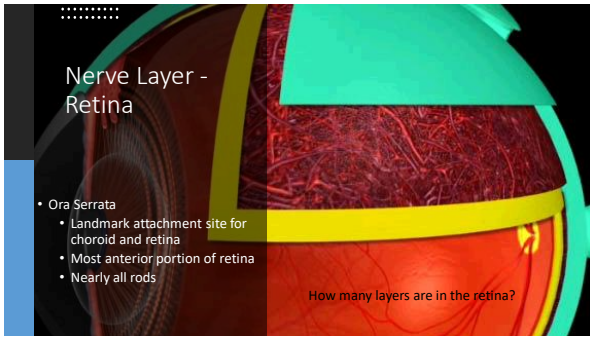
71



72

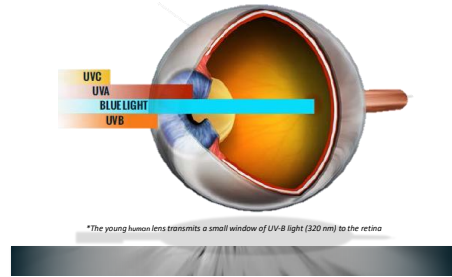


73



74

Blue light is the **highest energy visible light** that gets to the retina (back of eye) where AMD occurs. Most UV or non-visible light is screened out by the cornea and lens before it can hit the retina.



75



76

Anatomy and Physiology of the extraocular muscles

- The Extra-ocular Muscles (EOM)
 - Organized into an umbrella-like bundle among the orbital fat, orbital blood vessels and nerves
 - Six muscles associated with eye movements
 - Superior rectus (S.R.)
 - Inferior rectus (I.R.)
 - Medial rectus (M.R.)
 - Lateral rectus (L.R.)
 - Superior oblique (S.O.)
 - Inferior oblique (I.O.)

77

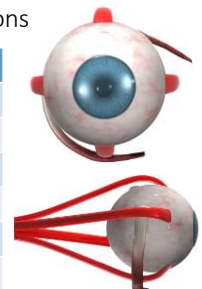
Ocular Adnexa

- Orbit
- Extraocular muscles
- Eyelids
- Lacrimal System
- Conjunctiva

78

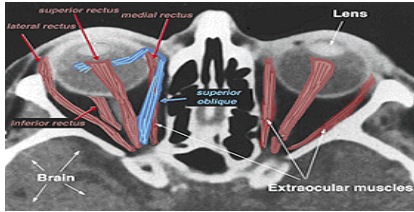
Extraocular Muscle Actions

| Muscle | Primary Action | Secondary Action | Tertiary action |
|------------------|----------------|------------------|-----------------|
| Lateral rectus | Abduction | None | None |
| Medial rectus | Adduction | None | None |
| Superior rectus | Elevation | Intorsion | Adduction |
| Inferior rectus | Depression | Extorsion | Adduction |
| Superior oblique | Intorsion | Depression | Abduction |
| Inferior oblique | Extorsion | Elevation | Abduction |



79

Extra Ocular Muscles



What is the name of the point where the muscles come together?

80

Extraocular Muscles

- **Medial Rectus**
 - - Most powerful, adduction, CN III
- **Inferior Rectus**
 - - Primary is depression, CN III
- **Lateral Rectus**
 - - Abduction, CN VI
- **Superior Rectus**
 - - Primary is elevation

81

Muscles and Function

- LR6...SO4...3
- Rectus
- Obliques
- Intorsion
- Extorsion
- Elevation
- Depression

An obvious upward/superior deviation of the eye is called?

82

Note the direction of movement when testing

- Esophoria
- Lateral rectus muscle

Eso

- Esotropia
- **Symptoms**
 - Decreased vision
 - Misaligned eyes
 - More commonly associated with diplopia

83

Note the direction of movement when testing

- In divergent strabismus, or exotropia, the visual axes diverge
- Medial rectus muscle

Exo

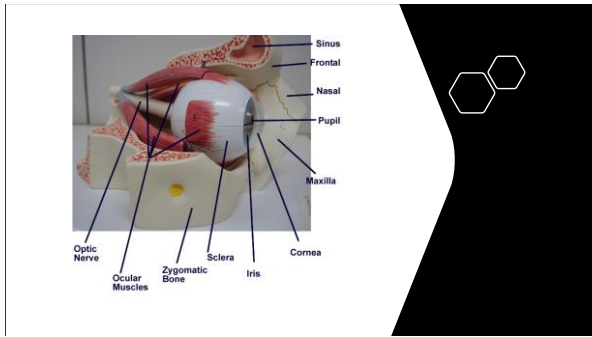
- **Symptoms**
 - Decreased vision
 - Misaligned eyes
 - Sensitivity to light

84

- Openings of the orbit
 - Purpose of openings
 - Transmit arteries and/or veins to and from the orbit
 - Transmit nerves to and from the orbit
 - Types of openings
 - Fissures (crevices/cracks)
 - Foramina (holes)
 - Major openings
 - Optic foramen - II cranial nerve - Optic Nerve
 - Supraorbital fissure - IV cranial nerve - Trochlear Nerve

Bony Orbit

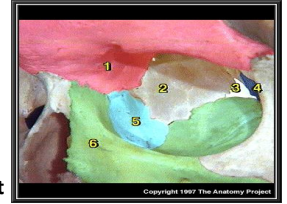
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86

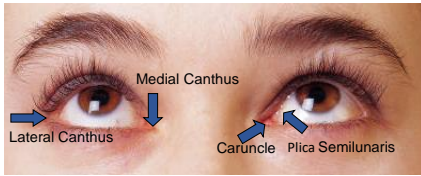
Orbit

1. Frontal bone ...**forehead**
2. Ethmoid bone ...**weakest**
3. Palatine bone ...**smallest**
4. Zygomatic bone ...**strongest**
5. Lacrimal bone
6. Maxillary bone ... **cheek bone**



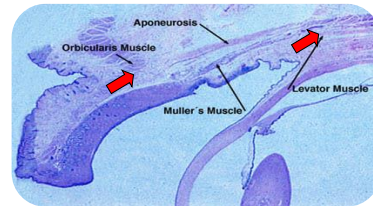
87

Adnexa: Eyelids



88

Adnexa: Eyelids



89

Orbicularis Muscle



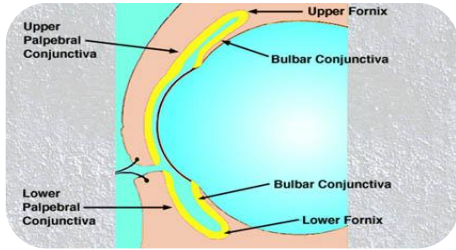
90

Levator Muscle



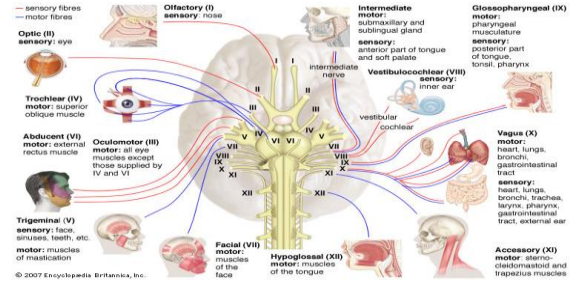
91

Conjunctiva



92

Cranial Nerves LR6SO4₃



93

Anatomy Ocular Physiology

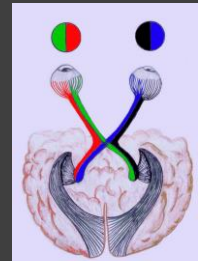
- The Orbit
 - - Bones, etc.
- The Sinuses
 - - Locations
- Human Body Planes
- External Structures
 - - Eyelids
 - - Conjunctiva
 - - Eyelashes and Eyebrows
- Lacrimal System



94

Visual Pathway

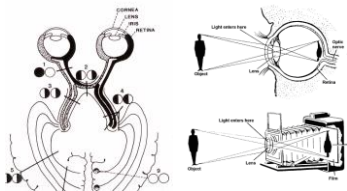
- Physical
- Physiological
- Psychological



What causes your physiological blind spot?

95

Visual Pathway

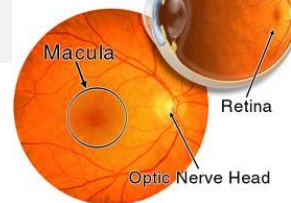


- Visual pathway has seven structures
 - Retina
 - Optic Nerve – light super highway information
 - Optic Chiasm
 - Optic Tract
 - Lateral Geniculate Body (LGB)
 - Optic Radiations
 - Visual Cortex ...where vision occurs

96

Retina

The Retina

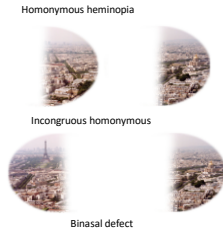


- Divided into four quadrants like the brain
- Fovea at exact center
- Optic nerve head located in nasal half
- Each quadrant sees the exact opposite visual field

97

Visual Field Defects

- Common types of field defects
 - Blind spots - Areas of blindness in the visual field
 - Hemianopsia - Blindness in one half of the visual field of one or both eye
 - **Homonymous** - Involving the **nasal** half of the visual field of one eye and the **temporal** half of the visual field of the other eye
 - **Incongruous** -



98

| Age | Usable accommodative power | Approximate spectacle Rx needed to see clearly at 16 inches |
|-----|----------------------------|---|
| 45 | +1.75 | +0.75 |
| 50 | +1.25 | +1.25 |
| 55 | +0.87 | +1.75 |
| 60 | +0.50 | +2.00 |
| 65 | +0.37 | +2.25 |
| 70 | +0.12 | +2.50 |

Presbyopia
 Presbyopia is not an ametropia. It is a condition of age, not refractive error. As we get older, our ability to accommodate decreases. Most theorists agree the amplitude of accommodation infants have is extremely high. Accurate measurements have shown the average amplitude of accommodation of a 10-year-old is about +14.00D. At age 70, the amplitude has drop to +0.12D.

99

Call it



100

Blepharitis ...inflammation of the lids

- | Symptoms | Treatments |
|---------------------------------|------------------------|
| • Redness along the lid margins | • Lid scrubs |
| • Crusting along the lid margin | • Medications/Ointment |
| • Eye irritation | • Monitoring |

101

Call it



102

- | Symptoms | Dry Eye | | | | | |
|--|--|-----------|------------------------|--|-----------------|----------------------------|
| • A stinging, burning or scratchy sensation in your eyes | <table border="0"> <thead> <tr> <th>Treatment</th> </tr> </thead> <tbody> <tr> <td>• Depends on the cause</td> </tr> <tr> <td>• Drops must address the problem if used</td> </tr> <tr> <td>• Punctal Plugs</td> </tr> <tr> <td>• Surgery may be necessary</td> </tr> </tbody> </table> | Treatment | • Depends on the cause | • Drops must address the problem if used | • Punctal Plugs | • Surgery may be necessary |
| Treatment | | | | | | |
| • Depends on the cause | | | | | | |
| • Drops must address the problem if used | | | | | | |
| • Punctal Plugs | | | | | | |
| • Surgery may be necessary | | | | | | |
| • Stringy mucus in or around your eyes | | | | | | |
| • Increased eye irritation from smoke or wind | | | | | | |
| • Eye fatigue | | | | | | |
| • Sensitivity to light | | | | | | |
| • Difficulty wearing contacts | | | | | | |
| • Periods of excessive tearing | | | | | | |
| • Blurred vision, often worsening at the end of the day (reading/computer) | | | | | | |

103

Call it



104

Conjunctivitis

Symptoms

- Redness in the white of the eye or inner eyelid
- Increased amount of tears
- Thick yellow discharge that crusts over the eyelashes, especially after sleep
- Green or white discharge from the eye
- Itchy eyes
- Burning eyes
- Blurred vision
- Increased sensitivity to light

Types

- Depends on the cause
 - Bacterial
 - Viral
 - Irritants
 - Allergies

105

Causes

- Viruses
- Bacteria (such as gonorrhea or chlamydia)
- Irritants such as shampoos, dirt, smoke, and pool chlorine
- Allergies, like dust, pollen, or a special type of allergy that affects some contact lens wearers
- Pinkeye caused by some bacteria and viruses can spread easily from person to person, but is not a serious health risk if diagnosed promptly. Pinkeye in newborn babies, however, should be reported to a doctor immediately

106

Call it



107

Subconjunctival Hemorrhage

Symptoms

- Redness on the white portion of the eye due to bleeding between the conjunctiva and sclera

Causes

- Hypertension
- Dehydration
- Sneezing
- Coughing
- Constipation
- Straining
- Heavy Lifting

108

Call it



Normally at 3 and 9 o'clock

109

Pinguecula... is **small like penguin**

Symptoms

- Nodule with or without irritation at the 3 and 9 o'clock positions

Treatment

- Medications / Ointments
- Sunglasses

110

Call it



111

Ptygerium ...is **large like pterodactyl**

Symptoms

- Eye irritation
- FB sensation
- Redness
- Dryness
- Induced astigmatism
- Reduced vision

Treatment

- Removal through surgical excision
- Surgery is very painful
- Can grow back

112

Call It



113



Hurts and is irritating

External Hordeolum / Chalazion

Symptoms

- Big red painful lump inside or outside of the eyelid

Treatment

- Heat
- Antibiotic ointment
- Surgery

114

Call it



115

External Hordeolum / Chalazion

Symptoms

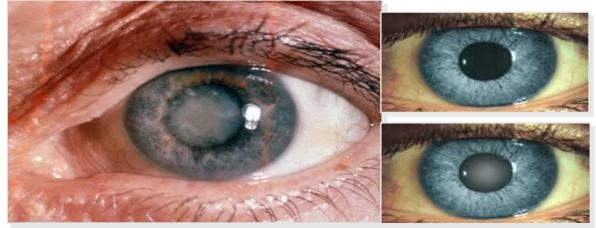
- Big red painful lump inside or outside of the eyelid

Treatment

- Heat
- Antibiotic ointment
- Surgery

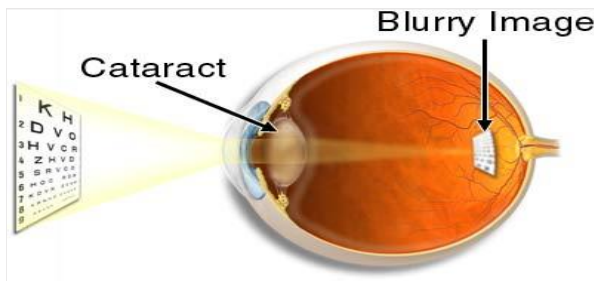
116

Call it



117

Cataract



118

Cataract

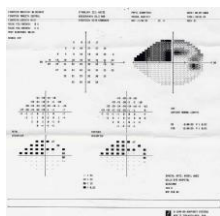
Symptoms

- Nuclear sclerotic cataracts
- NSCs are the most common type of cataract and many consider them to be a normal maturation of the lens. Over time, the lens becomes larger and brunescens (yellow or brown), especially in the denser central nucleus. If this process goes on long enough the opacity eventually leads to visual obstruction and problems with glare. The lens can become so big that it pushes the iris forward, placing the patient at increased risk for angle closure glaucoma.

Treatment

- Surgery:
- Cataract Extraction and IOL implant
 - There are different types of IOLs and different locations in which they can be placed

119



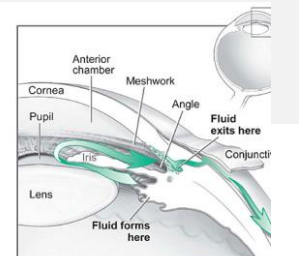
Call it



120

Types of Glaucoma

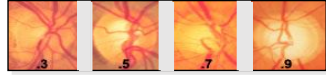
- Not curable/but treatable in most cases
- Low-tension/ normal tension glaucoma
- Angle-closure glaucoma
- Congenital glaucoma
- Secondary glaucoma
- Traumatic glaucoma



121

Glaucoma...acute and open angle

- Increased intraocular pressure
- Increased cupping (cup to disc ratio)
- Decrease in peripheral vision
- Optic Nerve Head (ONH) involvement



122

Floating cells

Call it



123

Floaters

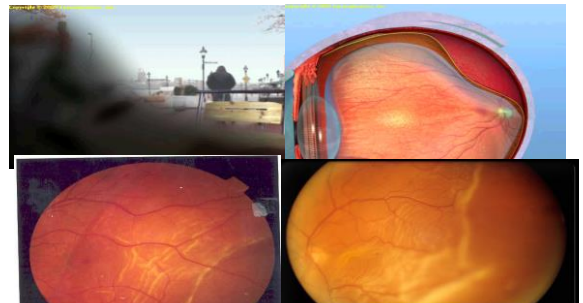
Symptoms

- Status of vitreous
- Age of patient
- Could be nothing/could be something ☺
- Post Vitreous Detachment (PVD)

Treatment

- Dilated exam
- Surgery
 - Vitrectomy

Call it



124

125

Retinal Detachment

Symptoms

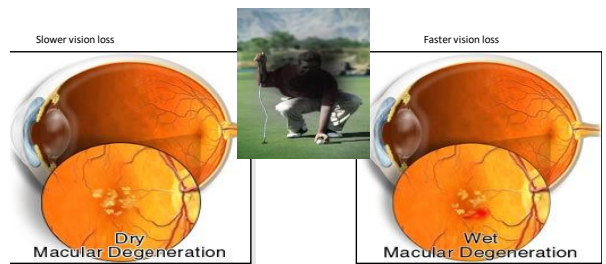
- Veil in vision
- Part of vision missing
- Flashes of light

Treatment



126

Macular Degeneration



127

Dry Macular Degeneration

- The need for increasingly bright light when reading or doing close work
- Increasing difficulty adapting to low light levels, such as when entering a dimly lit restaurant
- Increasing blurriness of printed words
- A decrease in the intensity or brightness of colors
- Difficulty recognizing faces
- A gradual increase in the haziness of your overall vision
- A blurred or blind spot in the center of your field of vision
- Hallucinations of geometric shapes or people, in cases of advanced macular degeneration

128

Wet Macular Degeneration

- Blood vessels growing in the macula
- Fluid build up
- Visual distortions, such as straight lines appearing wavy or crooked, a doorway or street sign looking lopsided
- Decreased central vision
- Decreased intensity or brightness of colors
- Well-defined blurry spot or blind spot in your field of vision
- Abrupt onset
- Rapid worsening
- Hallucinations of geometric shapes, animals or people, in cases of advanced macular degeneration
- Retinal Ophthalmologist

129

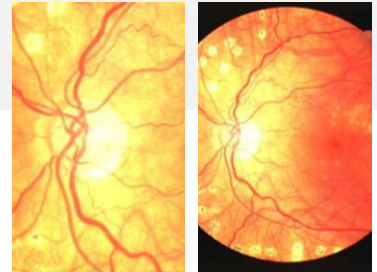
Call it



130

Diabetic Retinopathy

- Background
- Proliferative
 - Neovascularization



131

Diabetic Retinopathy

- Diabetic retinopathy often has no early warning signs. Even [macular edema](#), which may cause vision loss more rapidly, may not have any warning signs for some time. In general, however, a person with macular edema is likely to have blurred vision, making it hard to do things like read or drive. In some cases, the vision will get better or worse during the day.
- As new blood vessels form at the back of the eye as a part of *proliferative diabetic retinopathy* (PDR), they can bleed ([ocular hemorrhage](#)) and blur vision. The first time this happens, it may not be very severe. In most cases, it will leave just a few specks of [blood](#), or spots, floating in a person's visual field, though the spots often go away after a few hours.

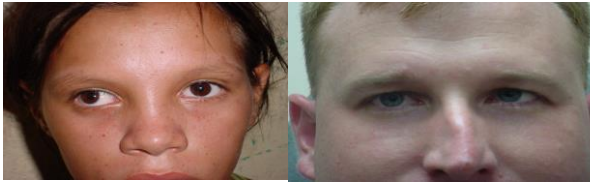
132



Call both photos

133

Call both photos



Exotropia
Eye deviates outward

Esotropia
Eye deviates inward

134

Strabismus

- symptoms**
- **Strabismus:** A condition in which the visual axes of the eyes are not parallel and the eyes appear to be looking in different directions. The danger with strabismus is that the brain cones may come to rely more on one eye than the other and that part of the brain circuitry connected to the less-favored eye fails to develop properly, leading to amblyopia (blindness) in that eye.
- treatment**
- Vision Therapy
 - Glasses
 - Patching
 - Dilatation
 - Surgery

135



Call it

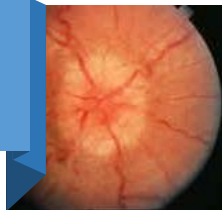
136

Retinoblastoma / Leukocoria

- A white color in the center circle of the eye (pupil) when light is shone in the eye, such as when taking a flash photograph
- Eyes that appear to be looking in different directions
- Eye redness
- Eye swelling
- Retinoblastoma occurs when nerve cells in the retina develop genetic mutations that cause the cells to continue growing and multiplying when healthy cells would die. This accumulating mass of cells forms a tumor. Retinoblastoma cells can invade further into the eye and nearby structures. Retinoblastoma can also spread (metastasize) to other areas of the body, including the brain and spine.

137

Call it



138

Papilledema / Optic Neuritis

- **Pain.** Most people who develop optic neuritis experience eye pain that's worsened by eye movement. Pain associated with optic neuritis usually peaks within several days.
- **Vision loss.** The extent of vision loss associated with optic neuritis varies. Most people experience at least some temporary reduction in vision. If noticeable vision loss occurs, it usually develops over the course of hours or days, and may be worsened by heat or exercise. Vision loss may be permanent in some cases.
- **Loss of color vision.** Optic neuritis often affects the perception of colors. You may notice that the colors of objects, particularly red ones, temporarily appear "washed out" or less vivid than normal.
- **Flashing lights.** Some people with optic neuritis report seeing flashing or flickering lights.
- **Multiple sclerosis**
- **Neuromyelitis optica**

139

Call it



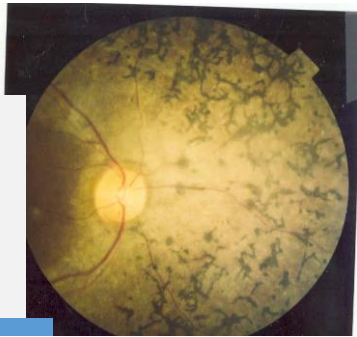
140

Central Retinal Vein Occlusion

- Painless loss of monocular vision is the usual presenting symptom of retinal artery occlusion (RAO). Ocular stroke commonly is caused by embolism of the retinal artery, although emboli may travel to distal branches of the retinal artery, causing loss of only a section of the visual field. Retinal artery occlusion represents an ophthalmologic emergency, and delay in treatment may result in permanent loss of vision.
- Immediate intervention improves chances of visual recovery, but, even then, prognosis is poor, with only 21-35% of eyes retaining useful vision. Although restoration of vision is of immediate concern, retinal artery occlusion is a harbinger for other systemic diseases that must be evaluated immediately.

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Call it



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Retinitis Pigmentosa

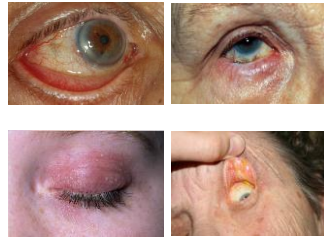
- Retinitis Pigmentosa (RP) is a group of eye diseases that affect the retina. The retina, which is located at the back of the eye, sends visual images to the brain where they are perceived. The cells in the retina that receive the visual images are called photoreceptors. There are two types of photoreceptors: rods (which are responsible for vision in low light) and cones (which are responsible for color vision and detail in high light).
- Signs of RP can usually be detected during a routine eye exam when the patient is around 10 years old. However, symptoms usually do not develop until adolescence.

143



Call it

144



Other Lid Defects

145

Droopy or Floppy Eyelids

Can be caused by nerve or muscle defects

- Can be excess skin (Dermatochalasis)
- Poor eyelid muscle tension (lid ptosis)
- Brow ptosis

Corrected by:

- Blepharoplasty
- Brow lift
- Face lift

146



Call it

147

What Is Shingles?

After you have chickenpox, the virus that caused it, called **varicella-zoster virus**, remains in your body. It's always inside you, lying dormant (or asleep) in your nerve cells. At some point later in life, **your immune system may weaken**, allowing the virus to resurface as Shingles. **You may be feeling great, but if you've had chickenpox, the Shingles virus is already inside you. And your risk for Shingles increases as you get older.**

<http://www.mayoclinic.org/diseases-conditions/shingles/basics/symptoms/con-20019574>

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At Risk

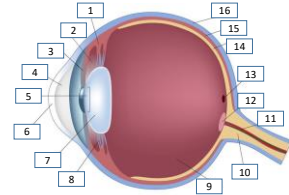
If you've had chickenpox, the Shingles virus is inside you. And as you get older, you're at increased risk for developing the painful, blistering rash. So don't wait to talk to your doctor or pharmacist. To help you start the conversation about Shingles, here are some questions you may want to ask. You can print them and take them with you the next time you see your doctor or pharmacist. Be sure to add any other questions you may have.

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150

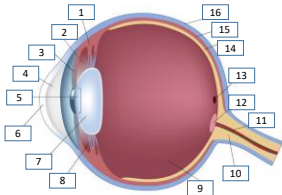
Anatomy Test



- | | | | |
|-------------------------|-----------------|---------------------|--------------|
| — Iris | — Pupil | — Optic Nerve | — Lens |
| — Macula | — Blood Vessels | — Vitreous Body | — Cornea |
| — Ciliary Body & Muscle | — Sclera | — Anterior Chamber | — Choroid |
| — Zonule Fibers | — Retina | — Posterior Chamber | — Blind Spot |

151

Anatomy Test



- | | | | |
|--------------------------|------------------|----------------------|---------------|
| _3 Iris | _5 Pupil | 10 Optic Nerve | _7 Lens |
| 13 Macula | 11 Blood Vessels | _9 Vitreous Body | _6 Cornea |
| _1 Ciliary Body & Muscle | 16 Sclera | _4 Anterior Chamber | 15 Choroid |
| _8 Zonule Fibers | 14 Retina | _2 Posterior Chamber | 12 Blind Spot |

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Thank You

martraln@msn.com

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