

Oculoplastics

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Oculoplastics Overview

Eyelids



Eyelids

Functions of Eyelids:

- **Protection:**
 - Light protection & regulation
 - Keep cornea moist
 - Mechanical protection of globe
- **Lacrimal pump**

Surface Anatomy

Upper Lid [UL] covers superior 2mm of cornea (10 – 2'o clock)



Lower Lid [LL] margin JUST touches inferior limbus

Surface Anatomy

Distance between UL margin & central pupillary reflex is margin reflex distance (MRD1) and normally, is 3.5 mm



Surface Anatomy

Space between UL & LL is palpebral fissure height (PFH) and normally, it is 9-12 mm.



Surface Anatomy

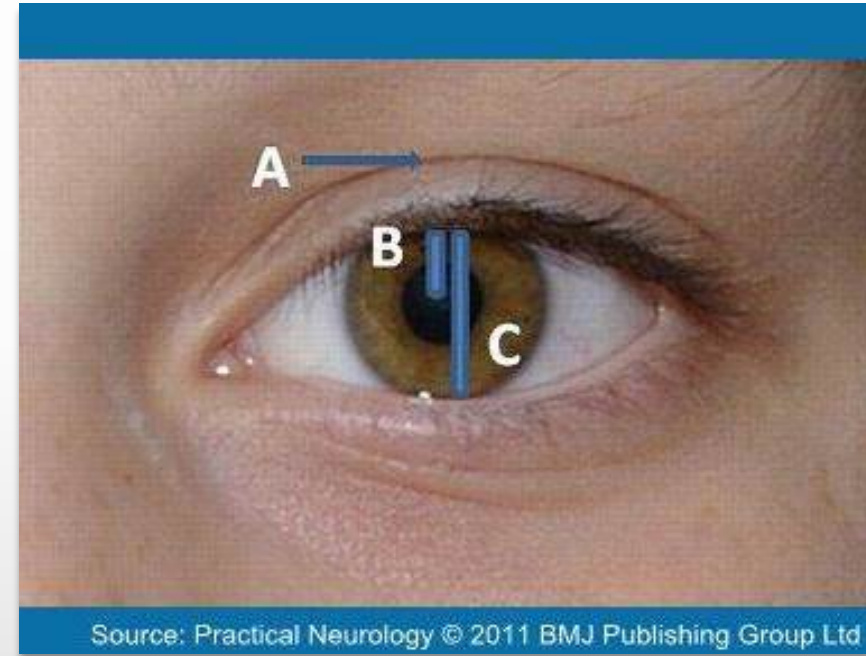
A puncta (one in each lid) lies in close apposition to globe



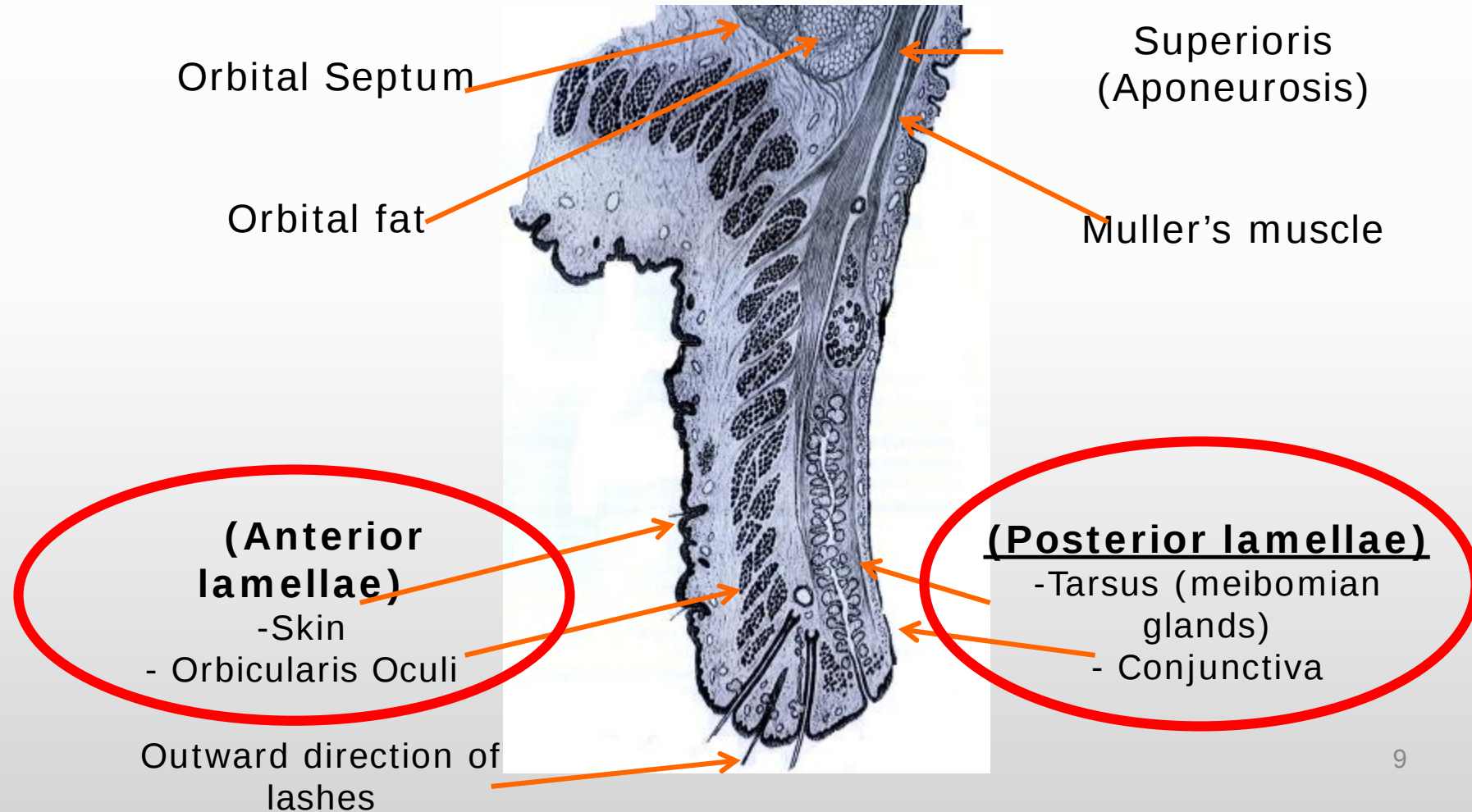
To Summarise:

Normal parameters for lid position evaluation:

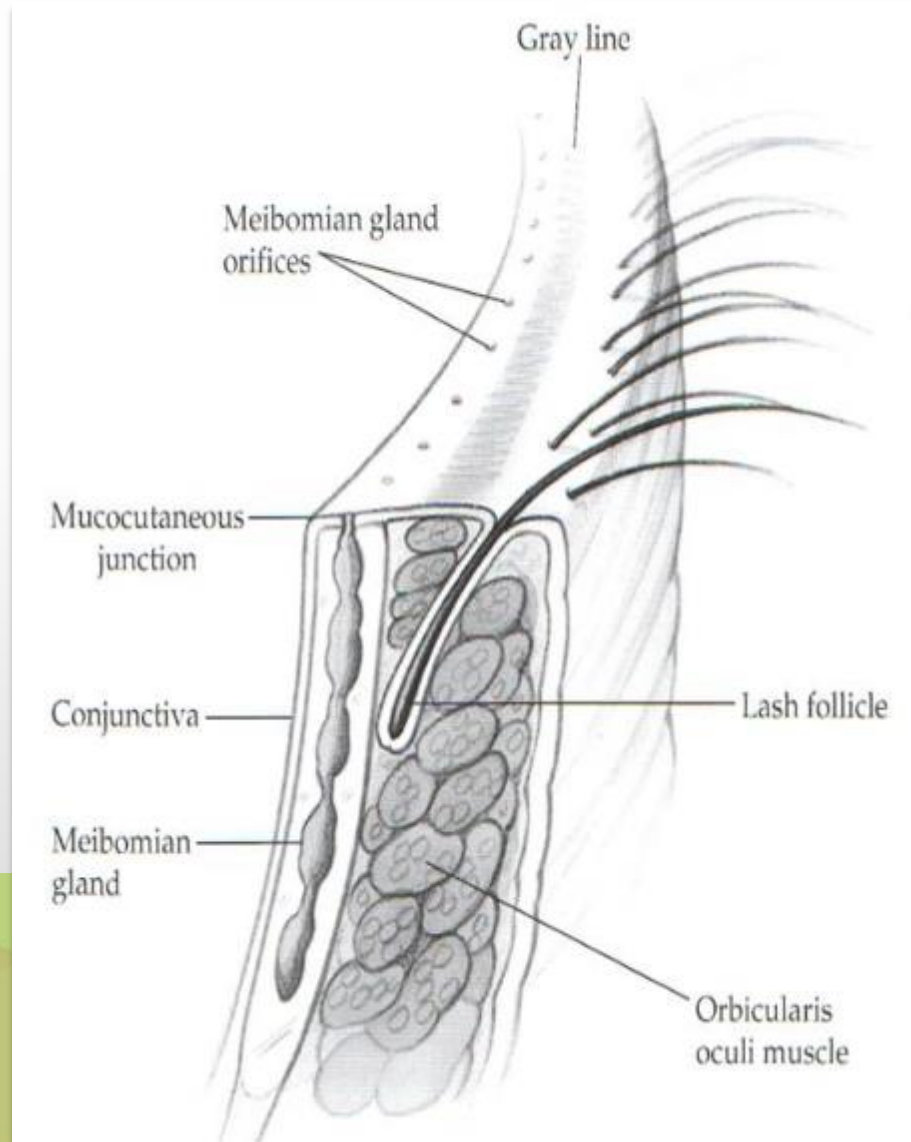
- A= Skin Crease
 - 10 mm in females
 - 8-10 mm in males
- B= MRD1 – 3.5 – 4.0 mm
- C= PFH – 9 -12mm
- Inferior scleral show – Nil
- Lagophthalmos (inability to close eyes) – Nil
- Bell's phenomenon (globe movement on eye closure)
 - Up and out



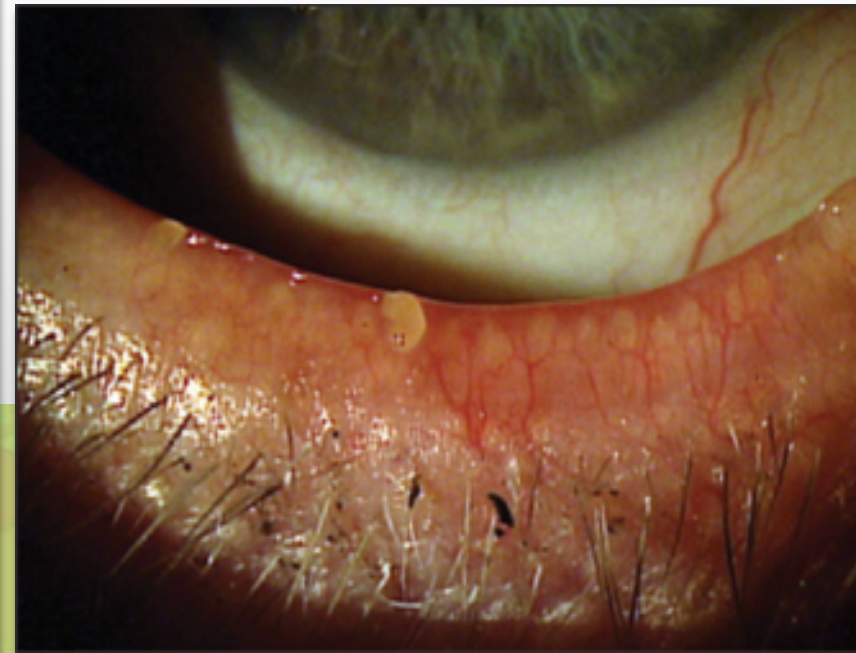
Eyelids: Internal Anatomy



Two Halves- Lamellae

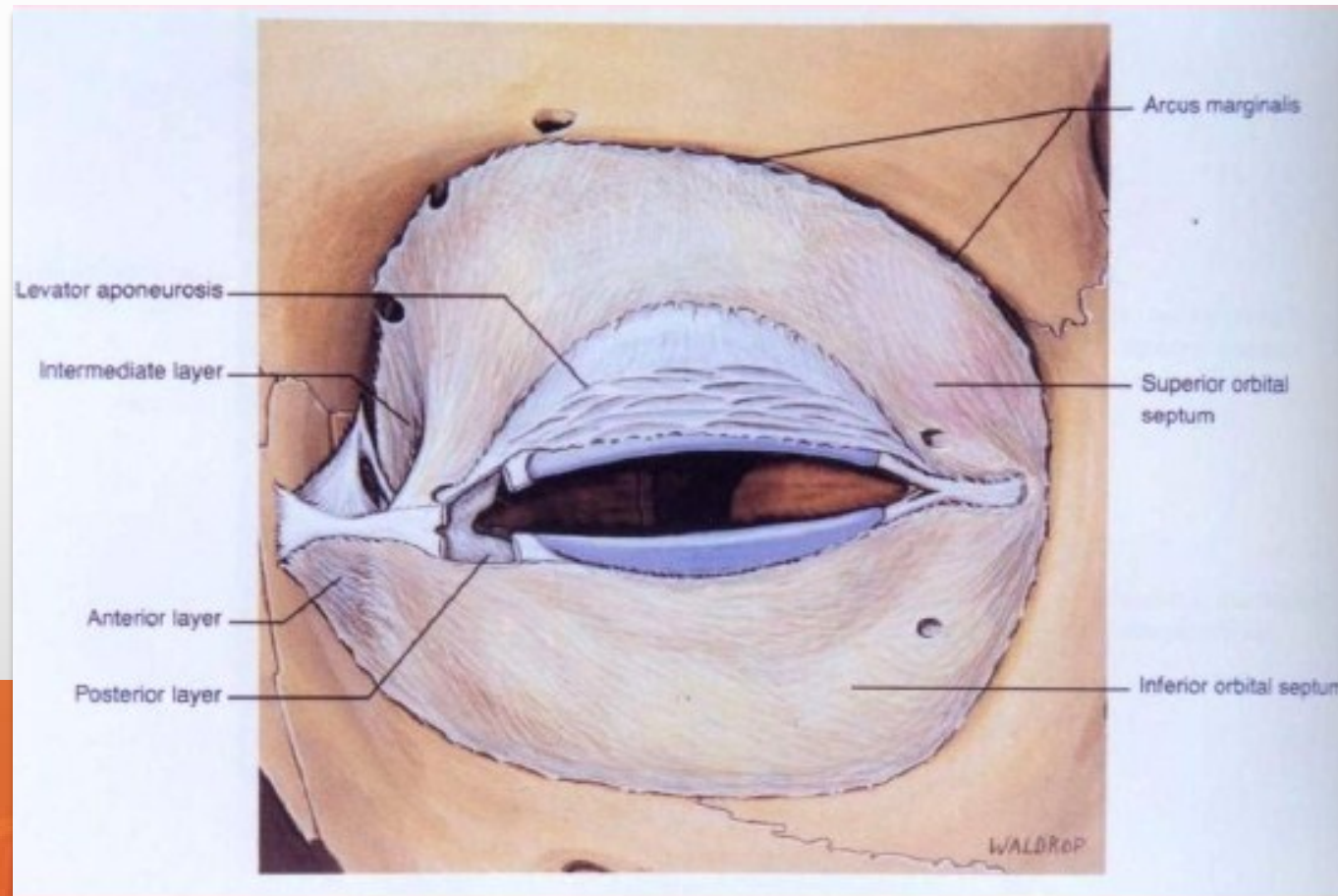


- **Septum**
- **Landmark** - Gray Line
 - o Anatomical
 - o Surgical

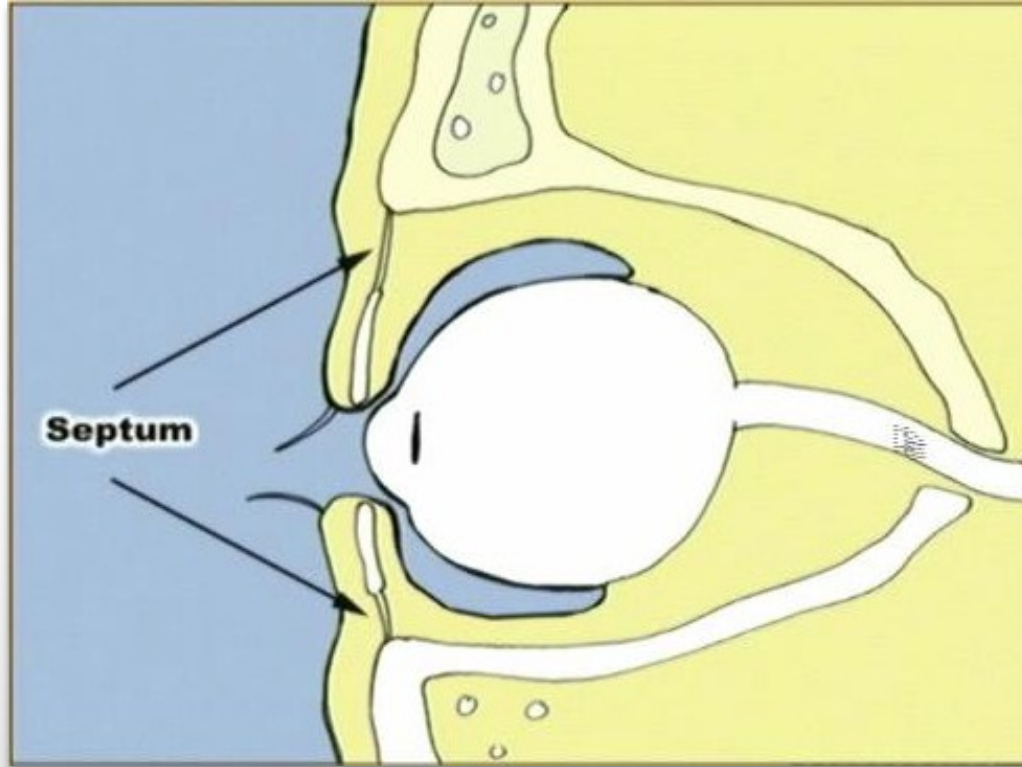


Orbital Septum

Thin sheet of fibrous tissue



Orbital Septum



Septum is a natural barrier between eyelid and orbit

Orbital Septum

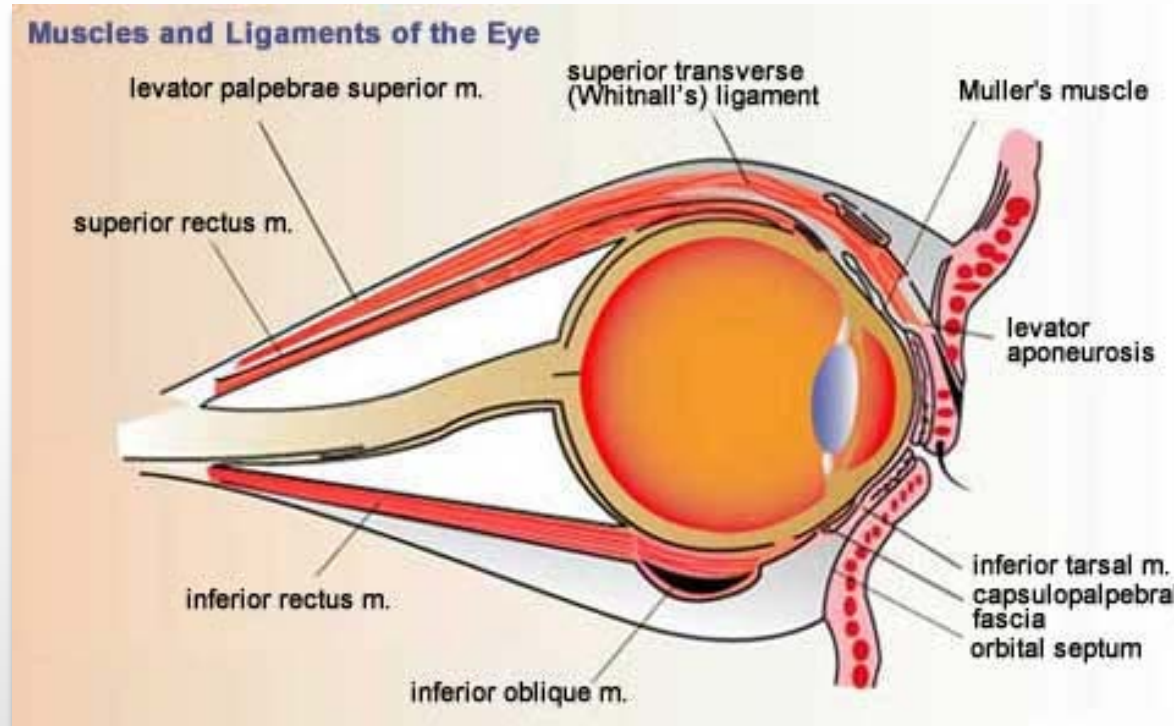


Preseptal cellulitis



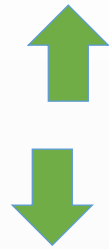
Orbital cellulitis

Muscles that Open the Eye



- Levator muscle
- Muller muscle

Eyelid Muscular and Nervous Control



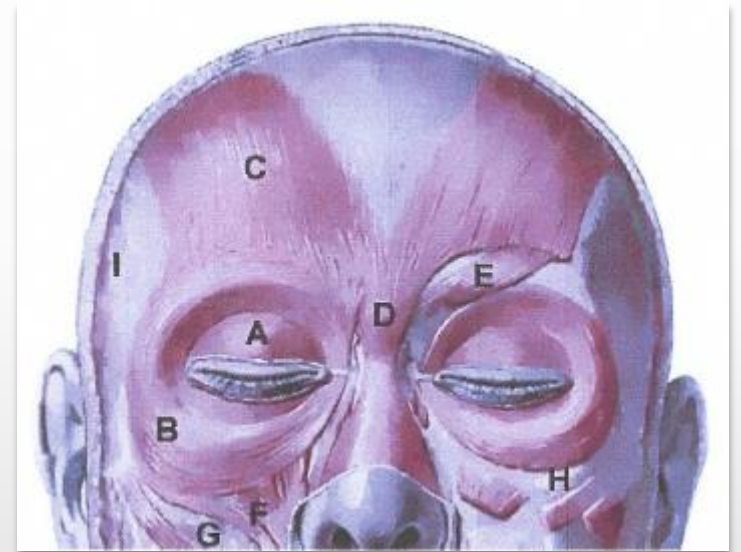
Eyelid Retractors:

- Levator
(3rd CN. **Parasym**)
- Muller's muscle (**Sym**)



Eyelid Protractor:

- Orbicularis Oculi (**VII N**)



Orbicularis Sling → Uplift



Oculoplastics Overview

Abnormal Upper Eyelid Position

Ptosis (Droopy Eyelid)



Levator Palpebrae superioris [LPS]

- LPS action – From extreme down gaze to extreme up gaze, by blocking the Frontalis
- Important while planning surgical management of ptosis
 - LPA – <4mm – poor
5-7mm – fair
> 8 mm – good



Causes of Ptosis?

- **Congenital**

- **Acquired**

- o Involutional
- o Neurogenic
- o Myogenic
- o Mechanical



Acquired Ptosis

Involucional (Aponeurotic dehiscence)

- Most common type of ptosis
- Long term contact lens wear

Features:

- o - Good LPS action
- o - High lid crease
- o - No lid lag on down gaze (worse)

Frontalis overaction
(s/o visual axis obstruction
by ptotic lid)



Acquired Ptosis

Neurogenic:

- Third Cranial nerve palsy

Note:

- Total ptosis
- Exotropia
- Hypotropia
- Mydriasis



Acquired Ptosis

Neurogenic:

- Horner's syndrome

Note:

- subtle ptosis
 - elevation of LL (apparent enophthalmos)
 - miosis
- sympathetic innervation to Muller's & smooth muscle of lower lid affected
- sympathetic innervation to Pupil (dilators) affected



Acquired Ptosis:

Neurogenic

- Horner's syndrome

<u>Table 23-1</u> Most Common Causes of Horner Syndrome in Adults Based on Lesion Location		
<i>Central (First Order)</i>	<i>Preganglionic (Second Order)</i>	<i>Postganglionic (Third Order)</i>
Hypothalamus • Stroke • Tumor	Cervical spine disease Brachial plexus injury	Superior cervical ganglion • Trauma • Jugular venous ectasia • Iatrogenic (surgical neck dissection)
Brainstem • Stroke (lateral medullary infarction) • Demyelination • Tumor	Pulmonary apical lesions • Apical lung tumor • Mediastinal tumors • Cervical rib • Trauma • Iatrogenic (jugular cannulation, chest tube, thoracic surgery) Subclavian artery aneurysm	Internal carotid artery • Dissection • Aneurysm • Trauma • Arteritis • Tumor
Spinal cord (cervicothoracic) • Trauma • Syringomyelia • Tumor (intramedullary) • Demyelination • Myelitis • Arteriovenous malformation	Thyroid tumors	Skull base lesions (nasopharyngeal carcinoma, lymphoma) Cavernous sinus lesion • Tumors • Pituitary tumor • Inflammation • Thrombosis • Carotid aneurysm Cluster headache

Acquired Ptosis:

Neurogenic

-Marcus Gunn Jaw wink



Acquired Ptosis

Myogenic:

- Chronic Progressive External Ophthalmoplegia [CPEO]
- Myasthenia gravis [diurnal variation]

Ptosis is ONE component of these syndromes



Acquired Ptosis

Mechanical:

- UL tumors
 - BCC, SCC, Sebaceous Cell Ca
 - Hemangioma
 - Lacrimal gland masses
- Lid oedema post-trauma/ surgery



Congenital Ptosis

Features:

- o Fair to Poor LPS action
- o Faint/ Absent lid crease
- o Lid lag on down gaze
- o +/- poor upgaze

NB Risk of amblyopia



Ptosis



Must assess:

- Pupils
- EOM, CN II
- Levator function
- Orbicularis power
- Bell's reflex
- Evert UL



Oculoplastics Overview

Abnormal Upper Eyelid Position

Lid Retraction



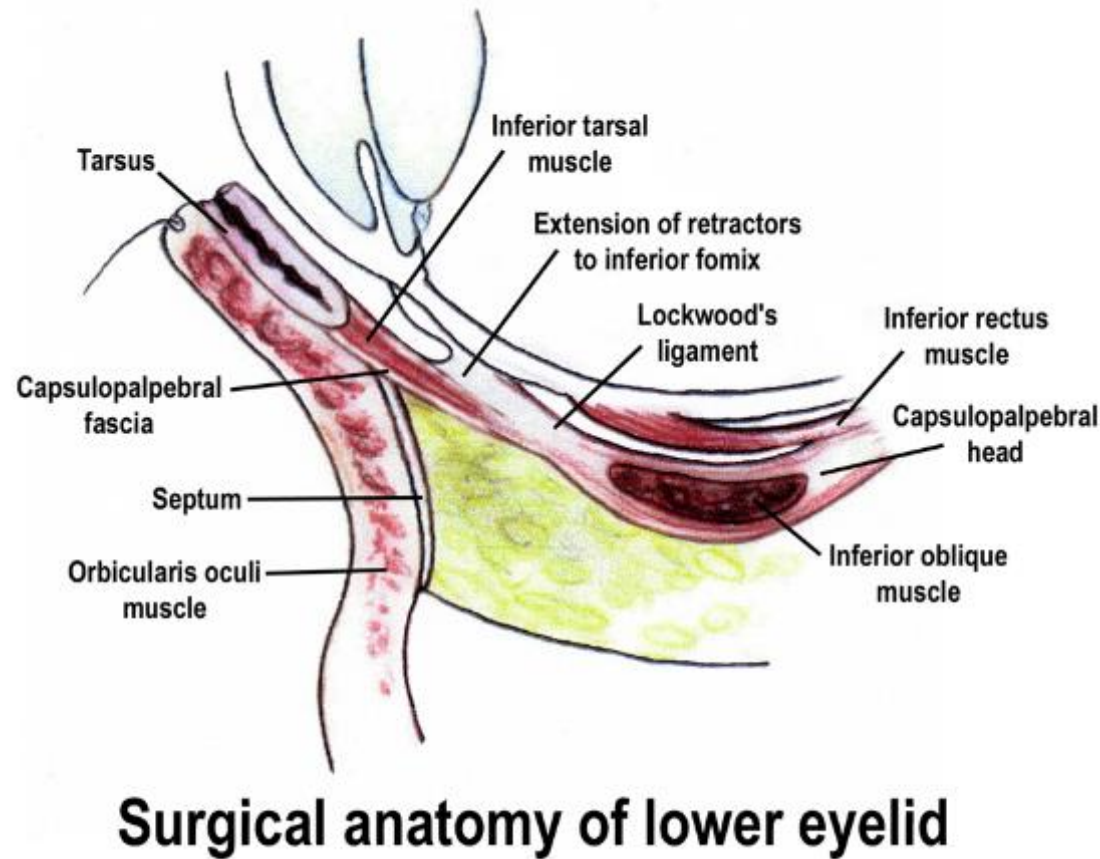
Lid Retraction

Causes:

- Congenital
- Acquired
 - o Thyroid Eye Disease
 - o Midbrain lesions
 - o Parinaud's syndrome



Lower Lid Malpositions



- 2 Lower lid retractors
- Less role in opening eyelid
- Pull lower lid inferiorly and posteriorly in downgaze
- Structurally stabilises lid margin

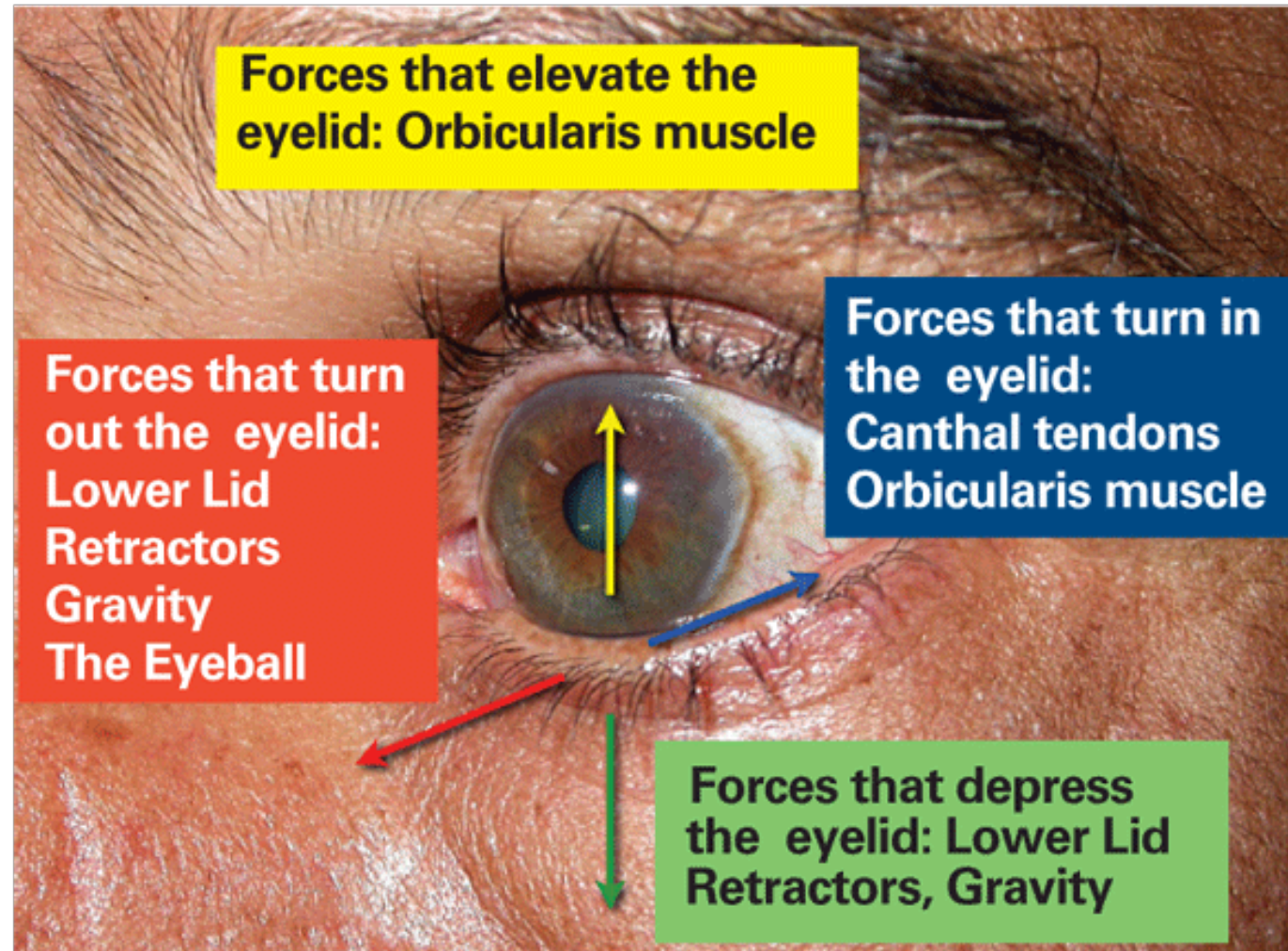


Figure 1. Forces acting on the lower eyelid to maintain normal position.

Oculoplastics Overview

Abnormal Lower Eyelid Position

Ectropion

(eyelid margin is away from the globe)



Ectropion

Causes:

- Involutional
- Cicatricial
- Paralytic (VII CN palsy)
- Mechanical



Prolonged ectropion leads to metaplastic changes in exposed conjunctiva

Ectropion

Causes:

- Involutional
- Cicatricial
- Paralytic (VII CN palsy)
- Mechanical



Due to laxity of canthal tendons (structural support of lids at medial & lateral ends) with age

Ectropion

Causes:

- Involutional
- **Cicatricial**
- Paralytic (VII CN palsy)
- Mechanical

Traumatic scar at cheek pulling the lower lid down



Ectropion



Cicatricial ectropion



Ectropion

Causes:

- Involutional
- Cicatricial
- **Paralytic (VII CN palsy)**
- Mechanical



Facial nerve supplying Orbicularis Oculi is affected, as in Bell's palsy, Parotid tumor excision, Acoustic Neuroma

Ectropion

Causes:

- Involutional
- Cicatricial
- Paralytic (VII CN palsy)
- **Mechanical**

Lower eyelid edema causing mechanical ectropion



Oculoplastics Overview

Abnormal Lower Eyelid Position

Entropion

(eyelid margin is rolled inwards)



Entropion

Causes:

- Involutional
- Trauma
- Cicatricial



Entropion leads to trichiasis (misdirection of lashes), which may cause punctate epitheliopathy of cornea to frank corneal ulcers.

Entropion

Causes:

- Involutional
- Trauma
- **Cicatricial**
 - o Ocular Cicatricial Pemphigoid
 - o Stevens Johnson syndrome
 - o Trachoma (developing countries)
 - o Chemical injury



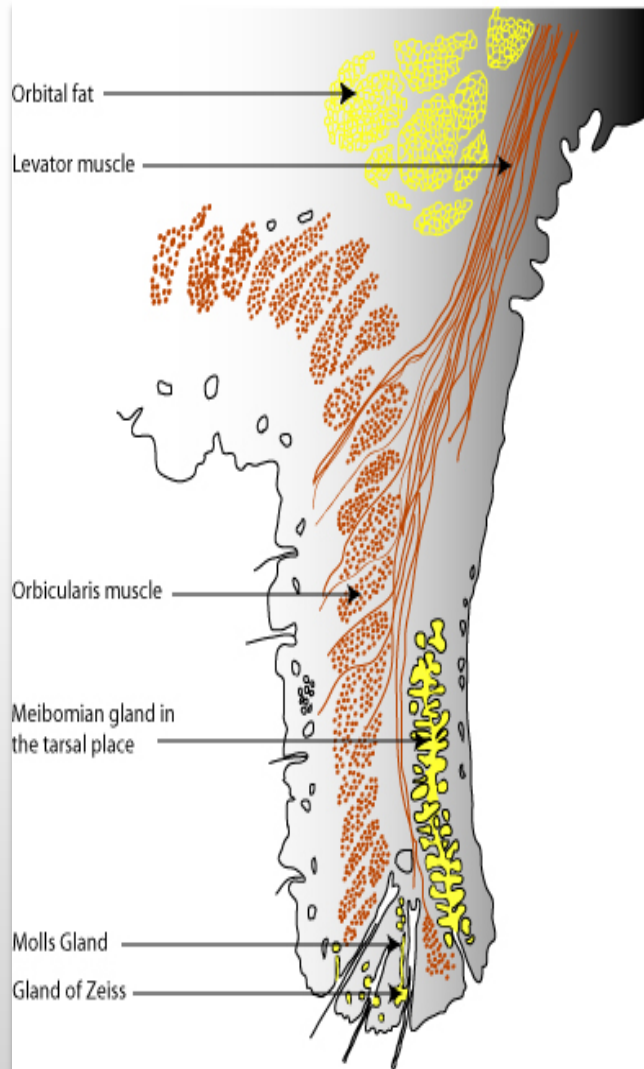
Contraction and thus, shortening of posterior lamella of the eyelid: which pulls and rolls in the eyelid margin along with eyelashes.

Common Eyelid Lesions

The Glands of the Eyelid



The Glands of the Eyelid



- **Glands of Zeis**



- **Glands of Moll**



- **Meibomian glands**

Benign Eyelid Lesions

Chalazion

- Chronic, granulomatous inflammation of
 - meibomian glands
- Involving posterior eyelid lamellae

Treatment:

- Warm compresses/ antibiotic ointment, if recent onset
- Incision & Curettage in resistant cases



Stye

- Tender, acute inflammation of sebaceous glands of
 - Zeiss or sweat glands of Moll at the base of eyelashes
 - in anterior eyelid lamellae

Treatment:

- Warm compresses, antibiotic ointment
- Expression of pus ± lash removal



Benign Eyelid Lesions

Xanthelasmas

- Yellowish, sessile plaques
- S/o hypercholesterolaemia

Treatment:

- Removal for cosmesis



Malignant Eyelid Lesions

Basal cell cancer

- Commonest lid malignancy (90%)
- Risk factors:
 - Fair skin & UV exposure

Features:

- Nodular/ulcerative with rolled edges
- Loss of lashes
- Telangiectatic blood vessels on surface



Treatment: Excision with wide margins ± Cryotherapy

Malignant Eyelid Lesions

Squamous cell cancer

- Fast growing skin cancer

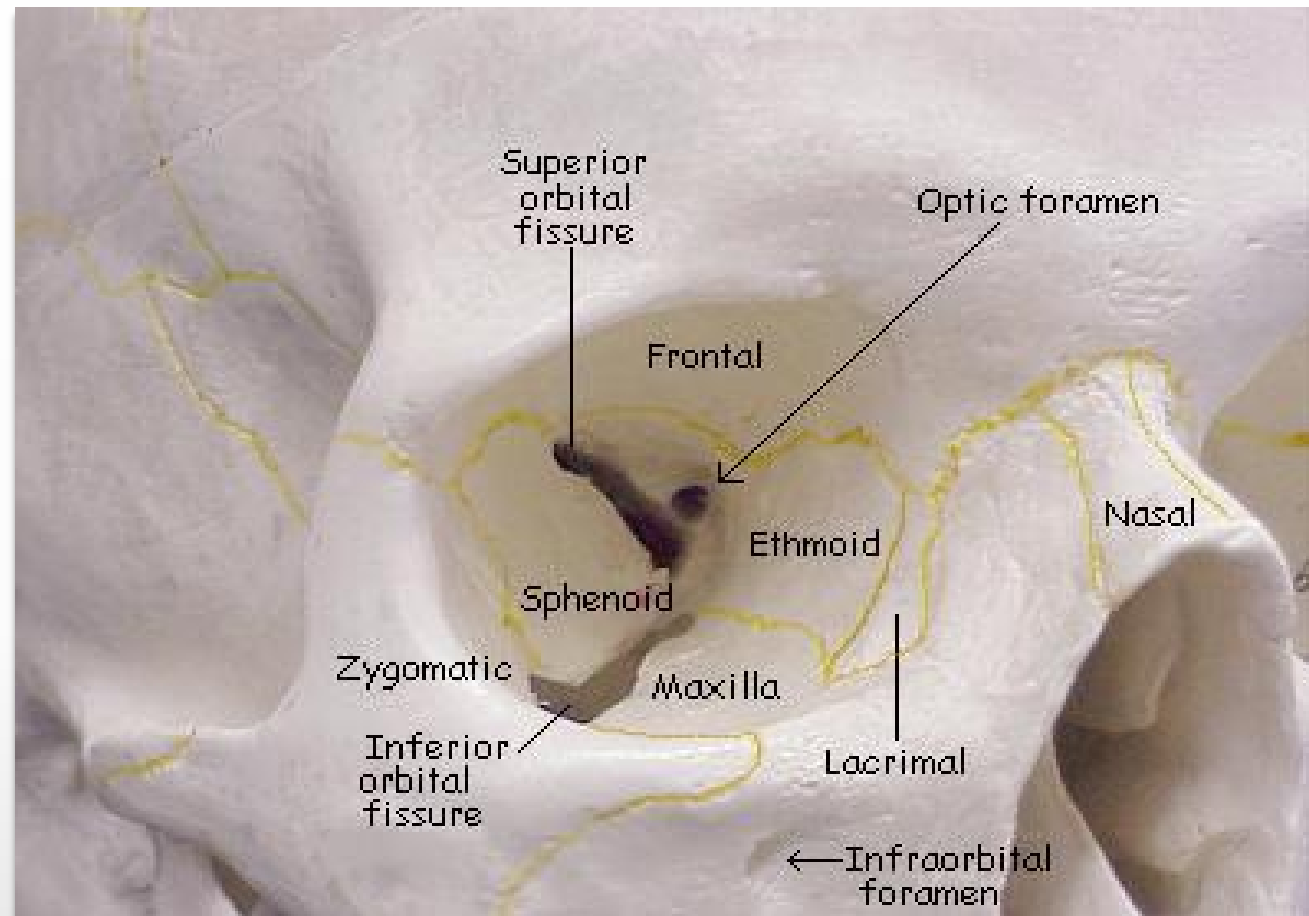
Features:

- Nodular
- Hyperkeratotic surface

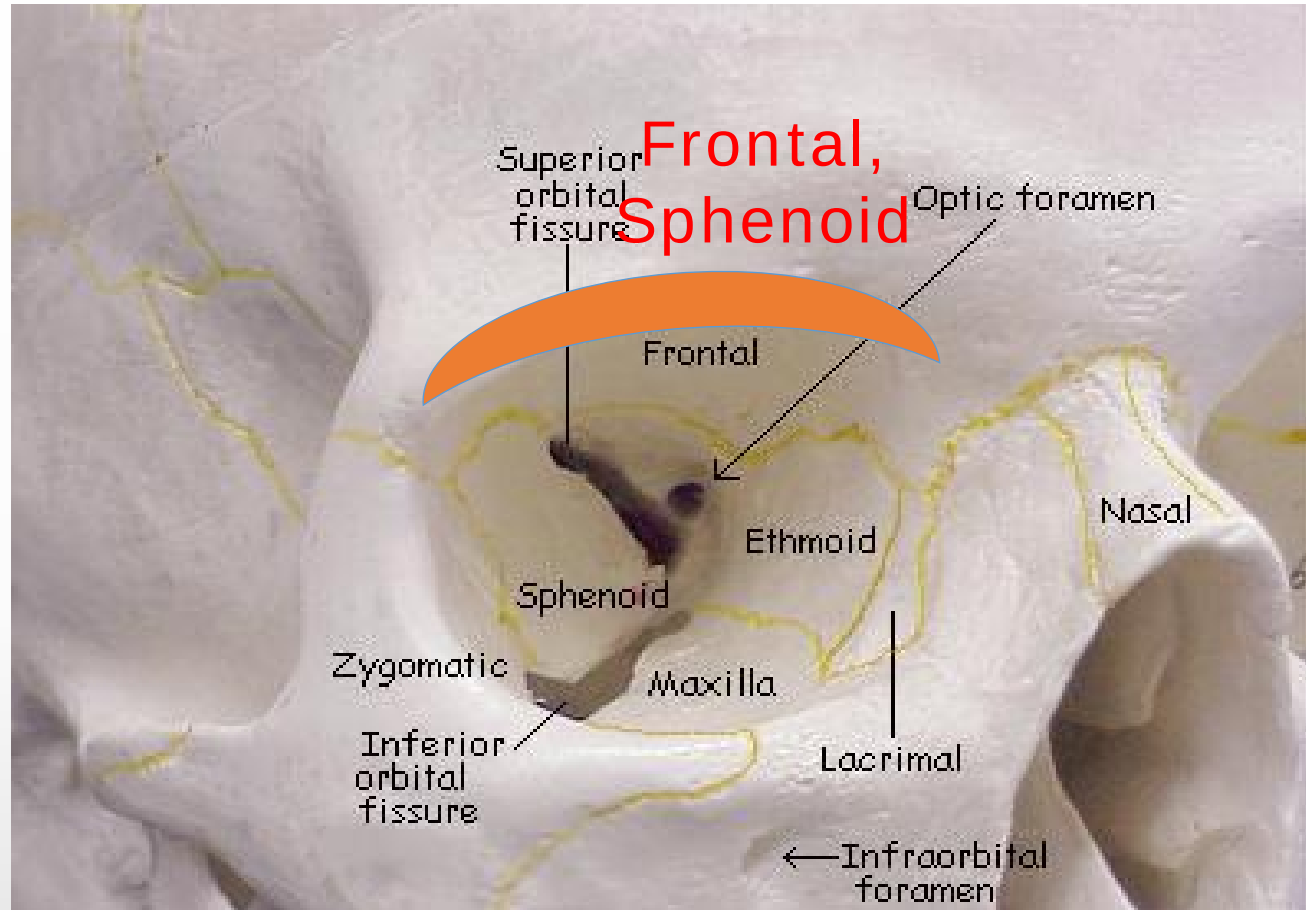


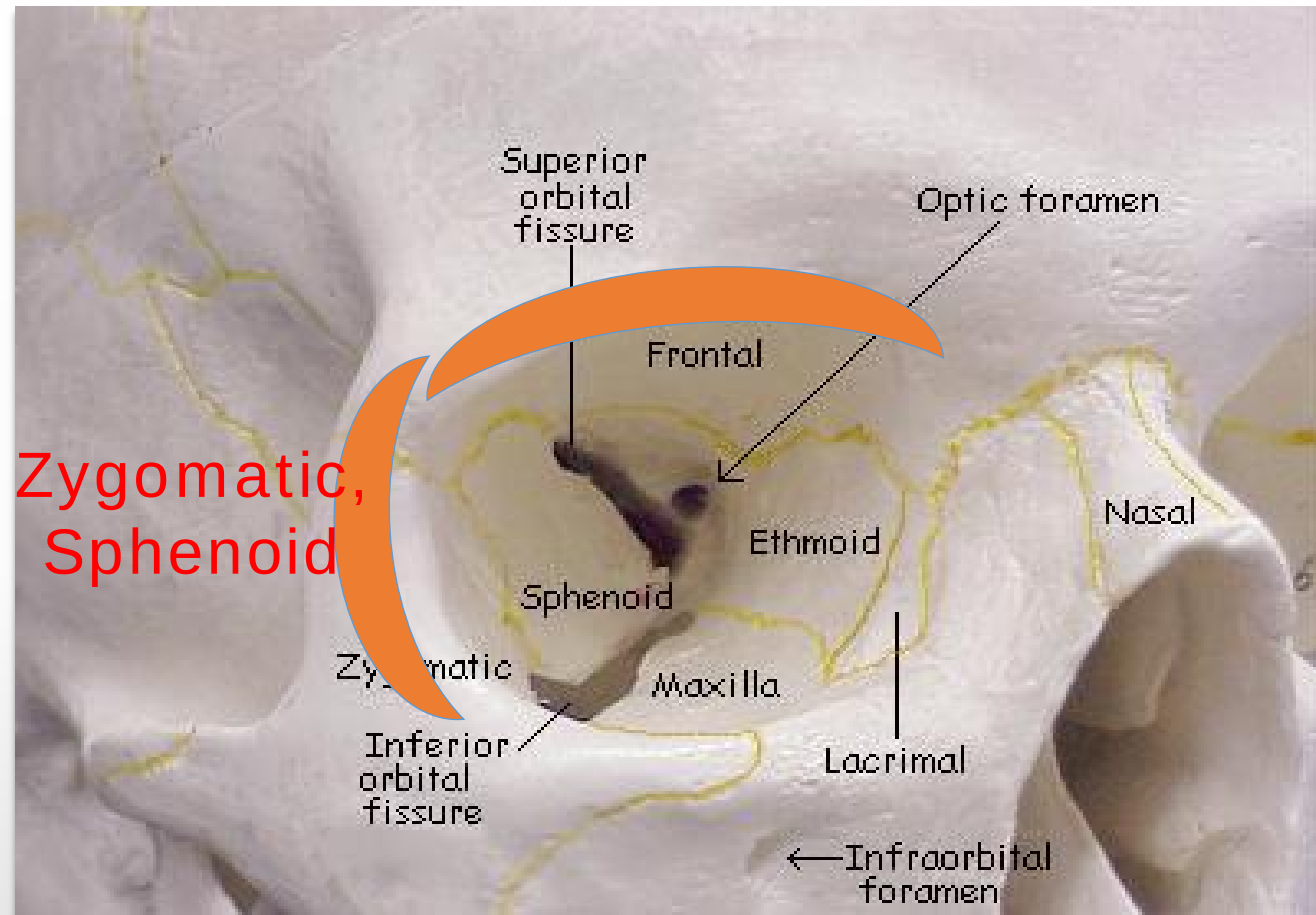
Treatment: Excision Biopsy with wide margins $\pm$ radiotherapy depending upon the depth of involvement

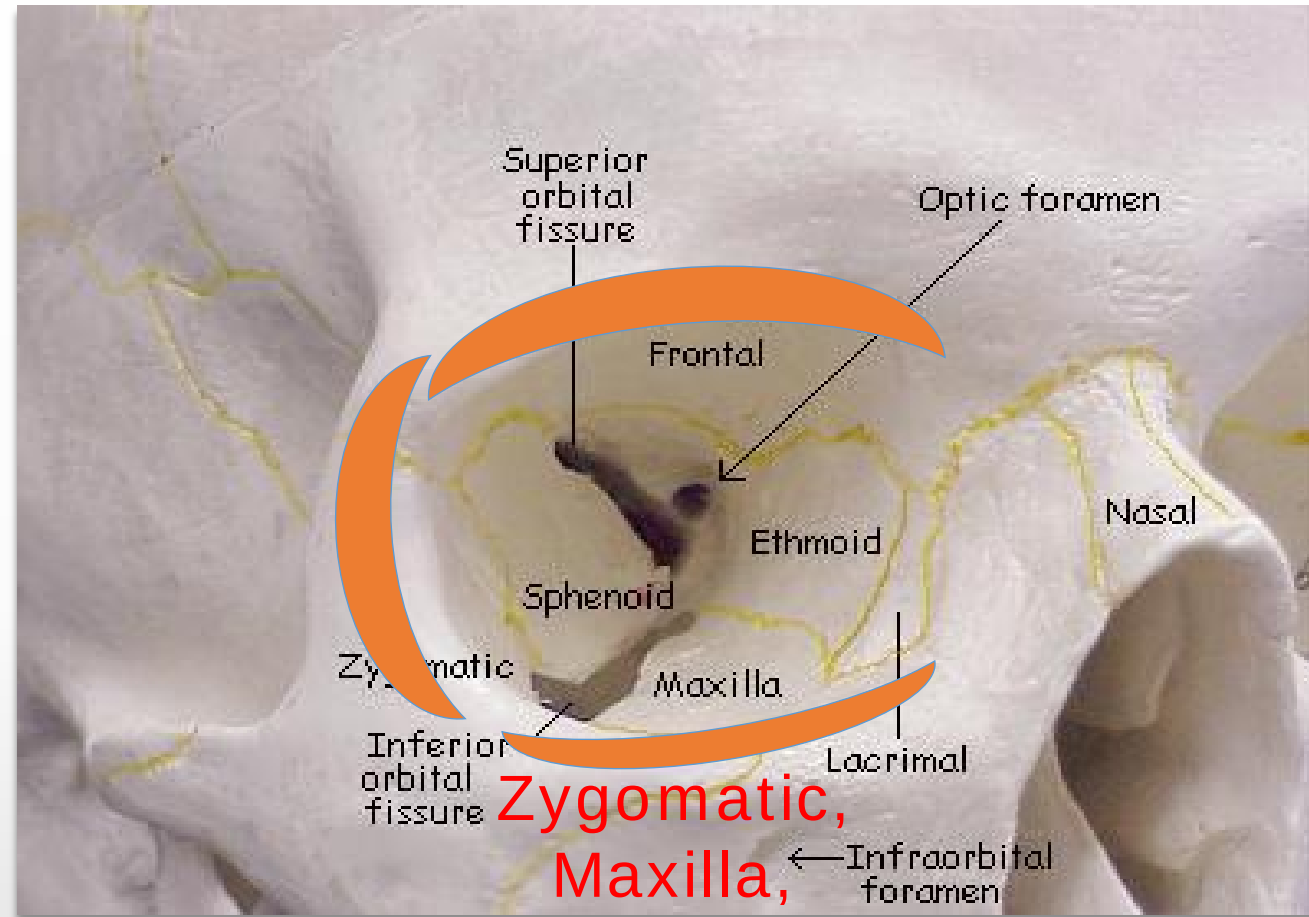
Orbit



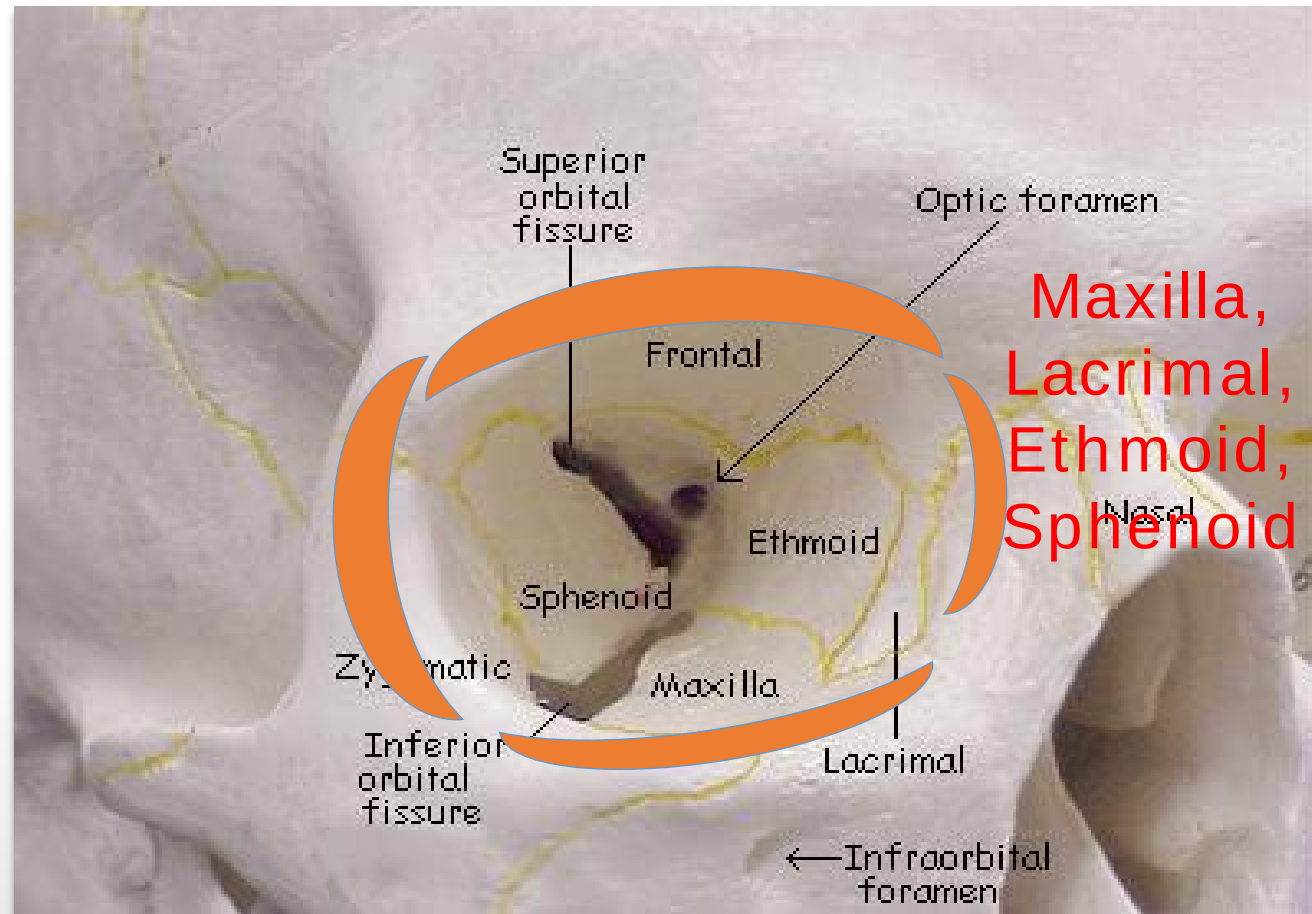
General overview of Orbital bones

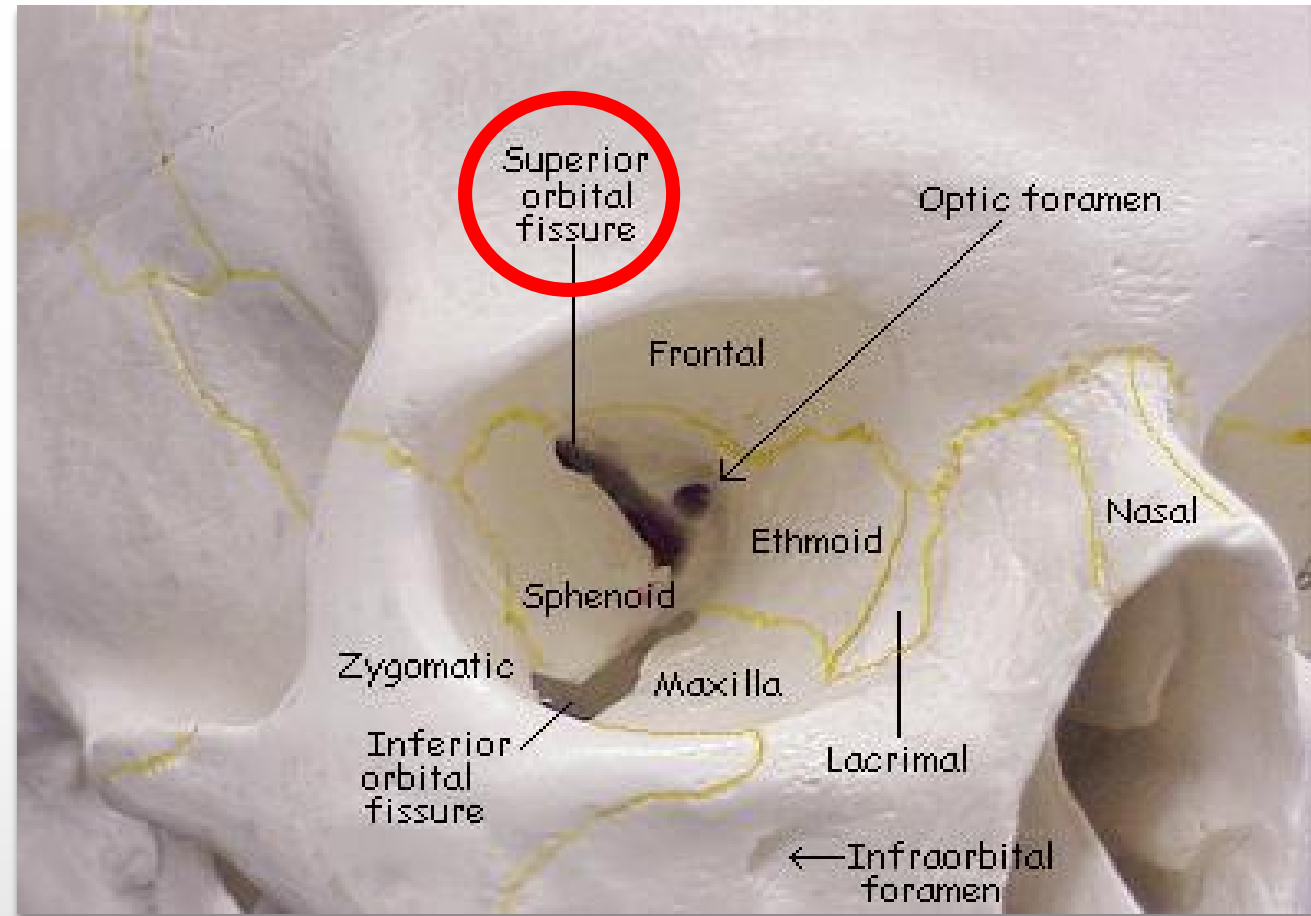


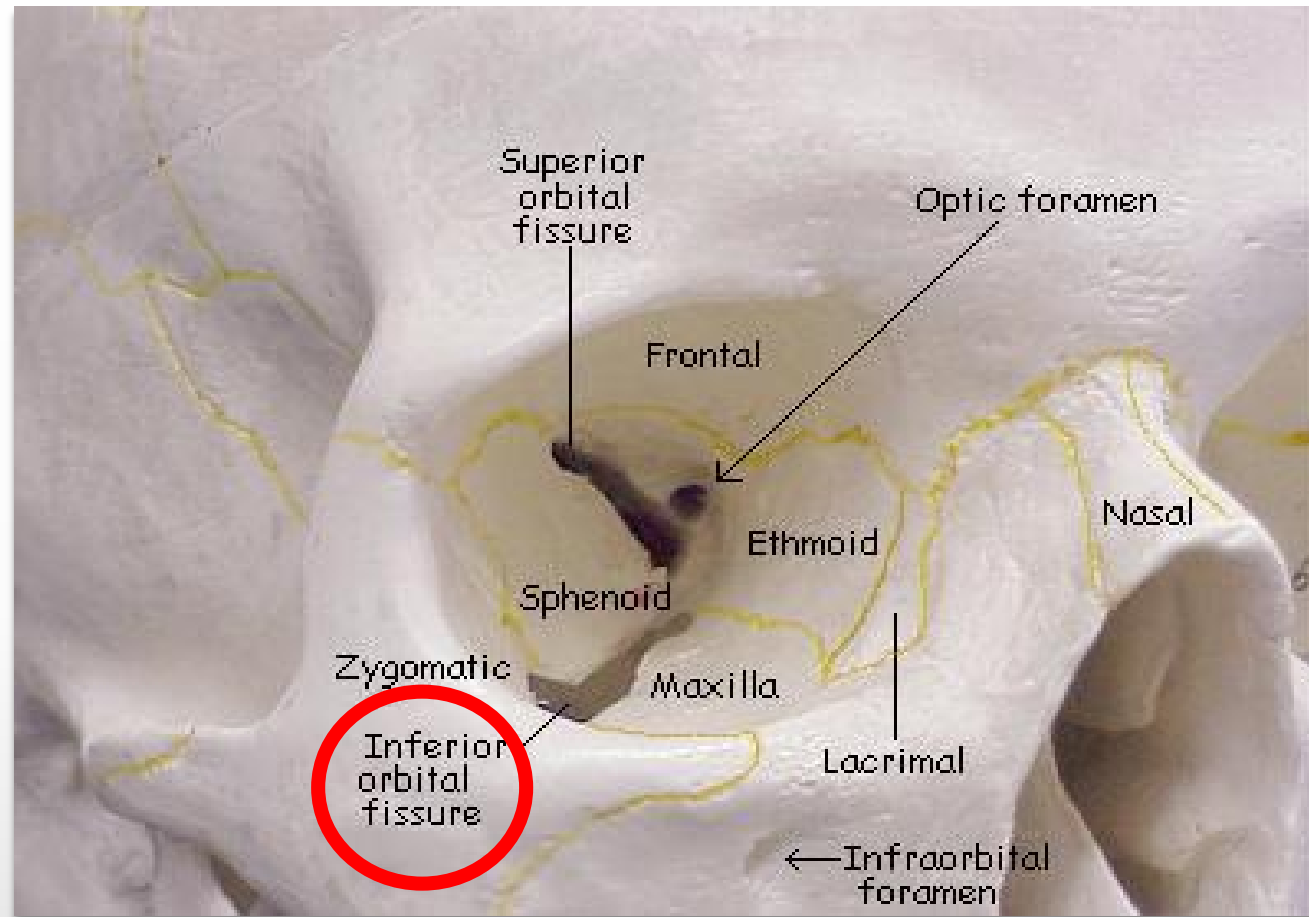


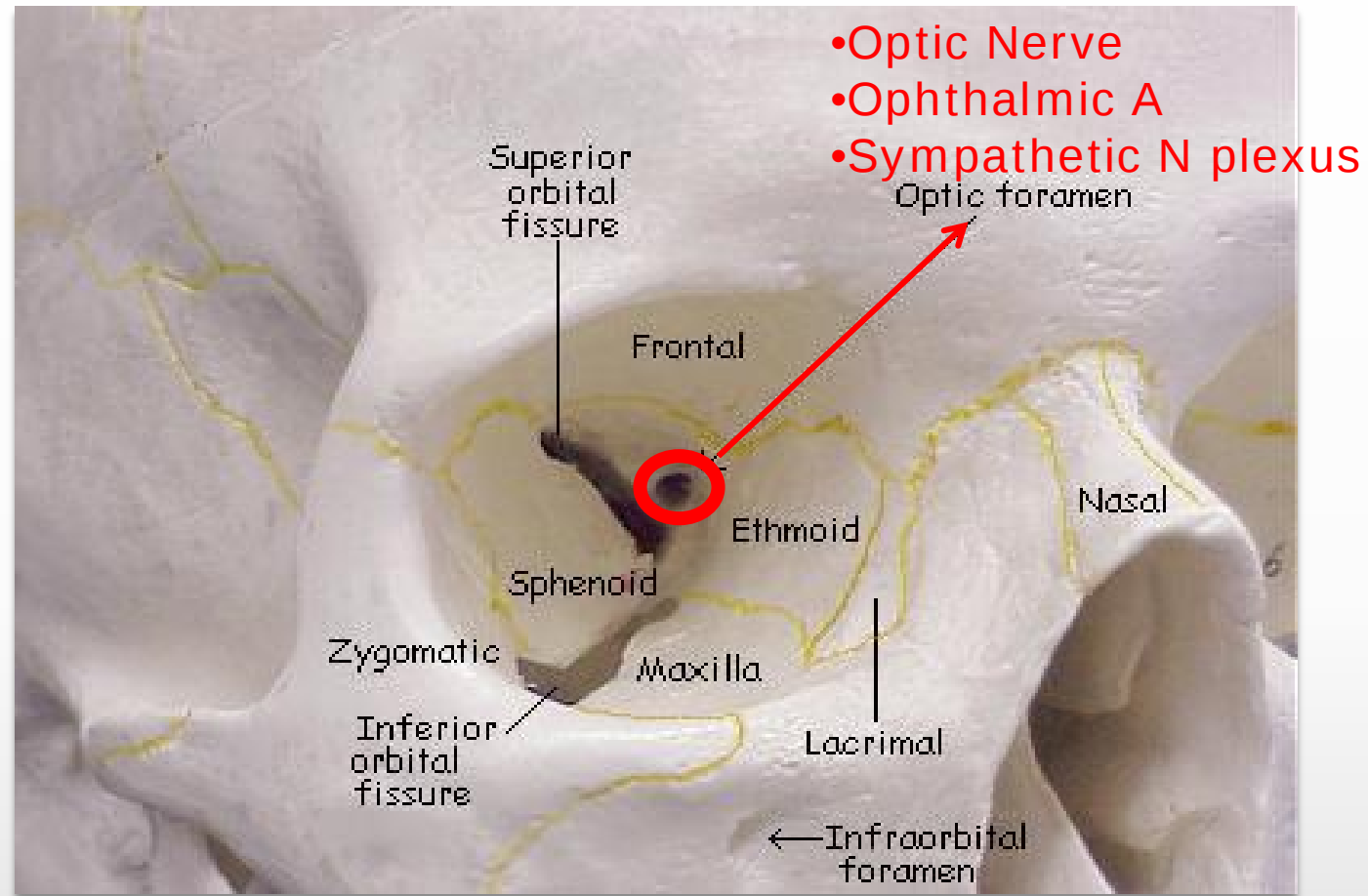


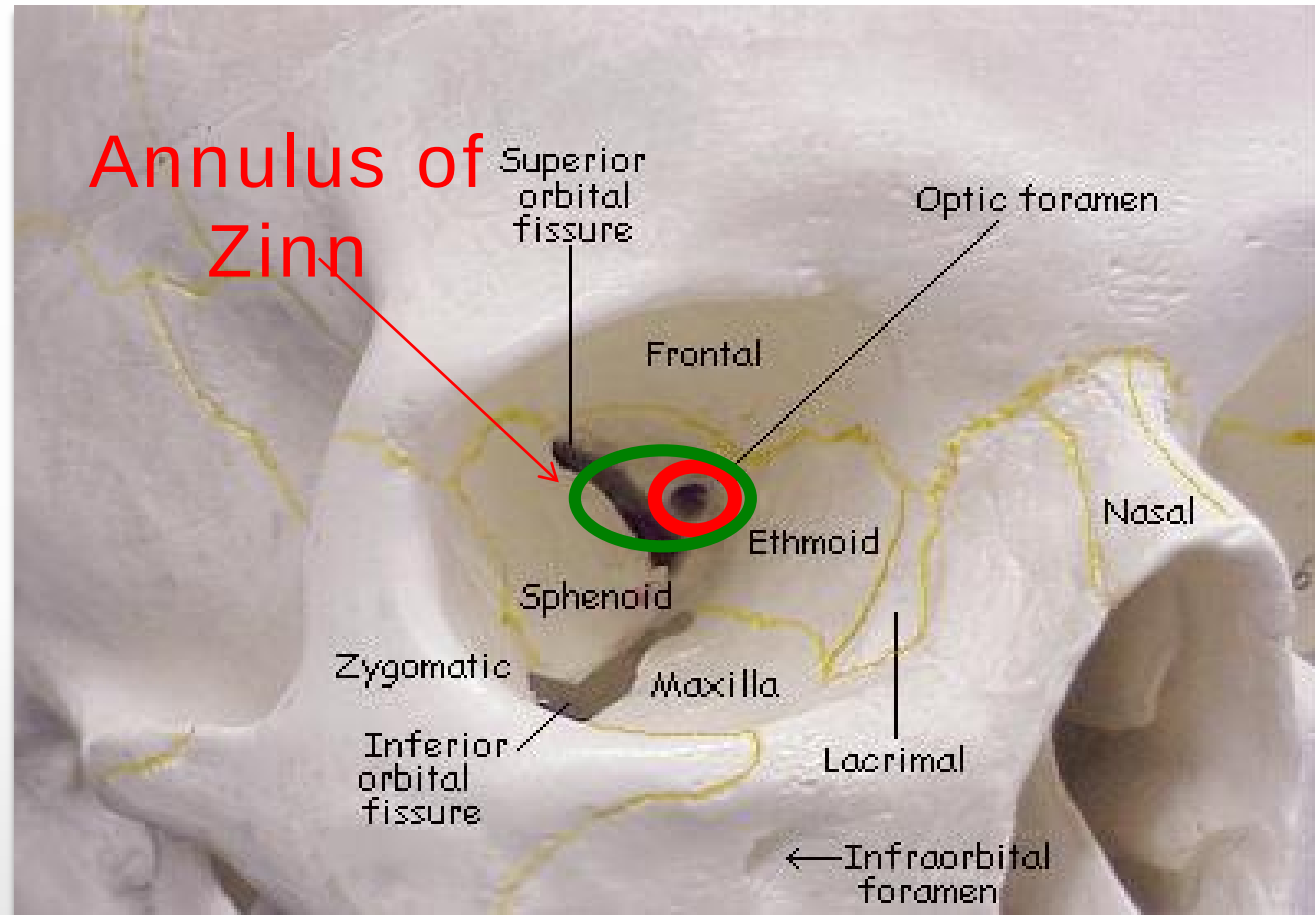
Zygomatic,
Maxilla,
Palatine











Orbital Examination

- Exophthalmometer – axial/non-axial, look from above/below
- Optic Nerve Function
- Pupils
- Extra-ocular movements, CN V
- Lids – ptosis, retraction, masses, scleral show
- Palpate – masses, pulsatile
- Lymph Nodes
- Auscultate ?Bruits



Common Orbital Disorders

Pre-septal cellulitis

Aetiology: Trauma, Insect bite, Sty

Features:

- Inflamed, oedematous lids
- Nil/ mild pain on eye movements
- Visual acuity good
- Normal Optic Nerve function



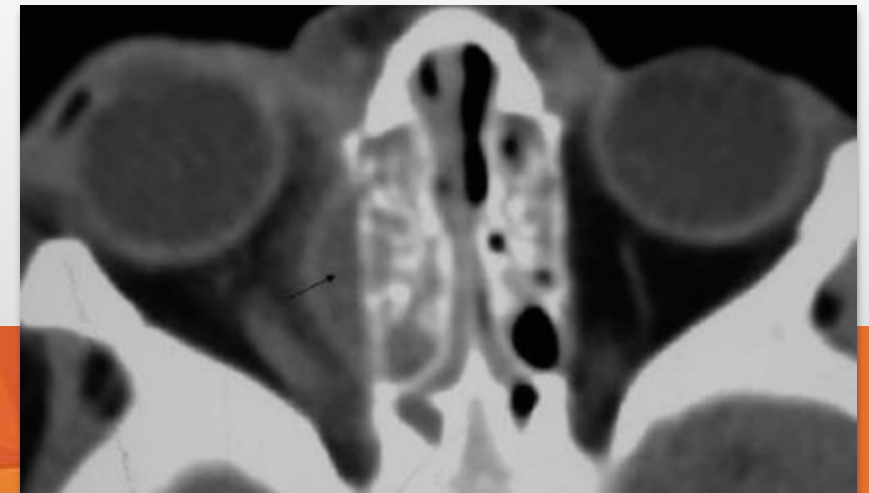
Orbital Cellulitis

Aetiology:

Sinusitis (commoner in children)
Trauma/ Tumour in adjoining sinuses

Features:

- Proptosis
- Inflamed pre-septal tissues
- Painful/ limited eye movements
- Reduced Visual acuity
- Compromised Optic Nerve function



Thyroid Eye Disease

- Proptosis
- Restrictive Myopathy
- Optic Neuropathy

Lid signs:

- lid lag, lid retraction,
- lid swelling, lagophthalmos

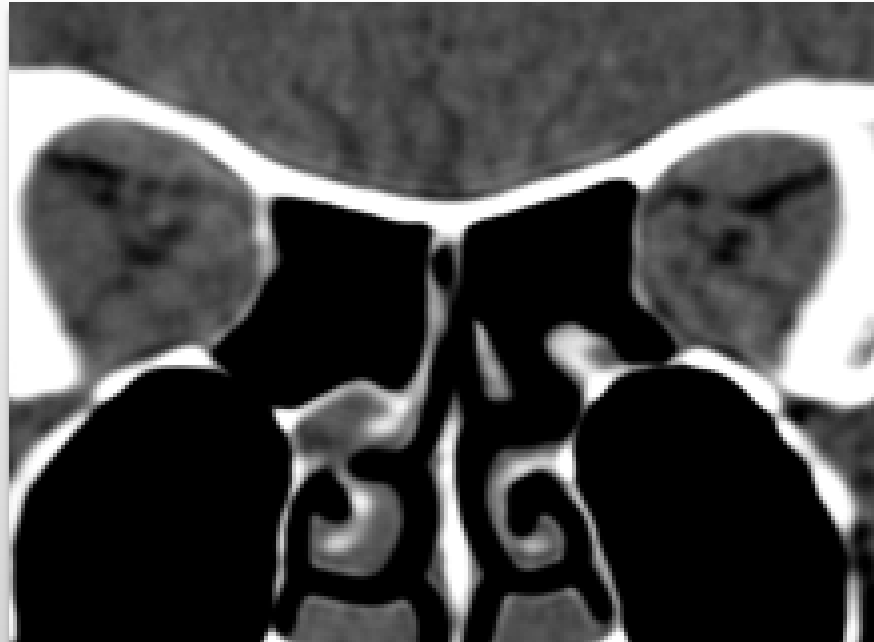
Ocular surface Inflammation

- esp. over horizontal recti muscles
- Dry eyes
- Exposure keratopathy
- Glaucoma



Thyroid Eye Disease- Pathogenesis

- Lymphocytic infiltration
- Muscle & fat oedema and expansion
- Deposition of hyaluronic acid & GAGs



Thyroid Eye Disease

CT scan features in Thyroid eye disease



Thick extra-ocular (recti) muscles

Maximum diameter of globe beyond lateral orbital rim

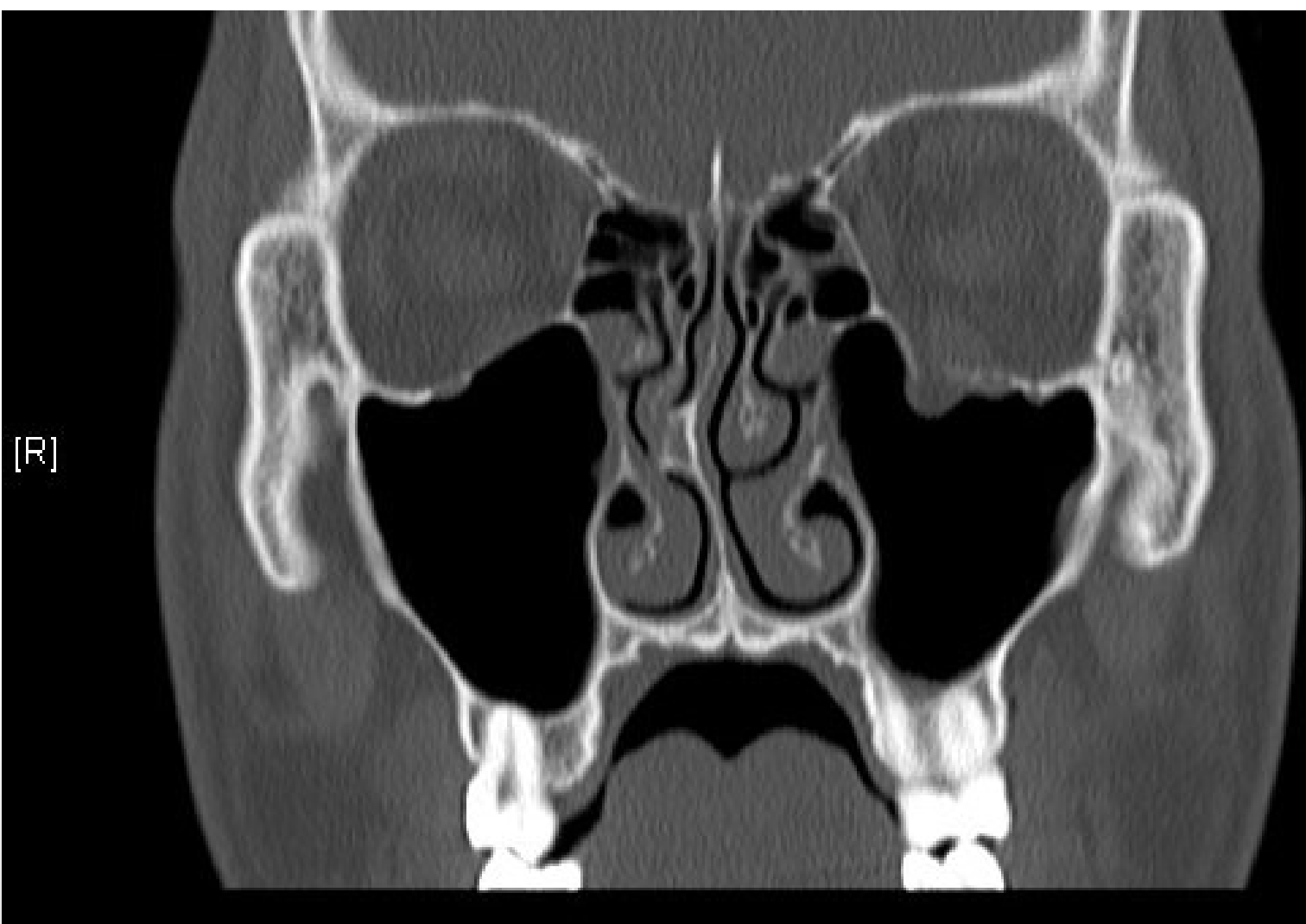
Tenting of optic nerve on right side ()

Thyroid Eye Disease

Keep a close watch on:

- **Corneal exposure** – treat with lubricants/ taping eyelids shut
- **Optic nerve** - functions due to its possible compression by enlarged extra-ocular muscles— might need urgent surgical intervention





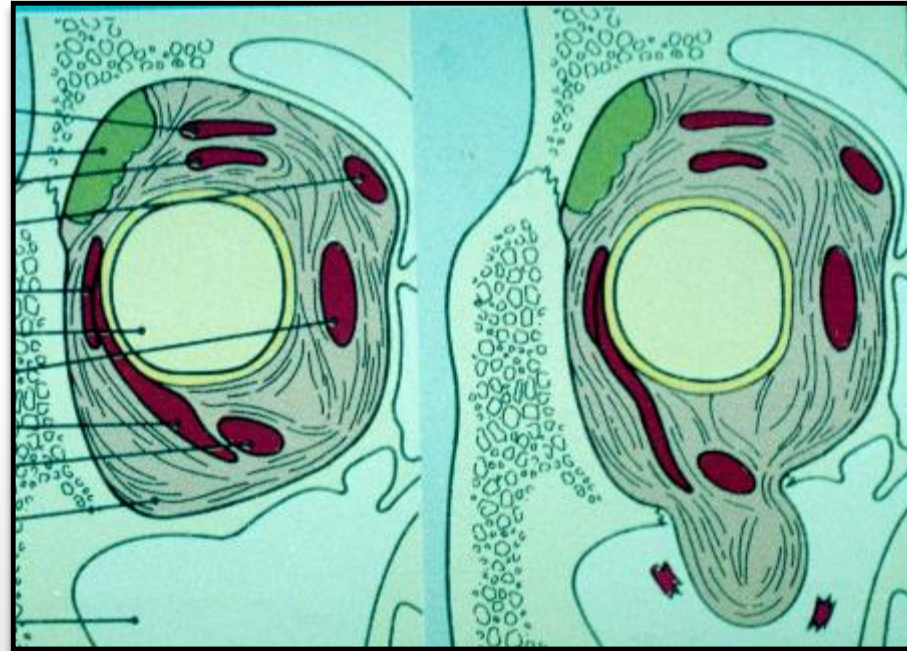
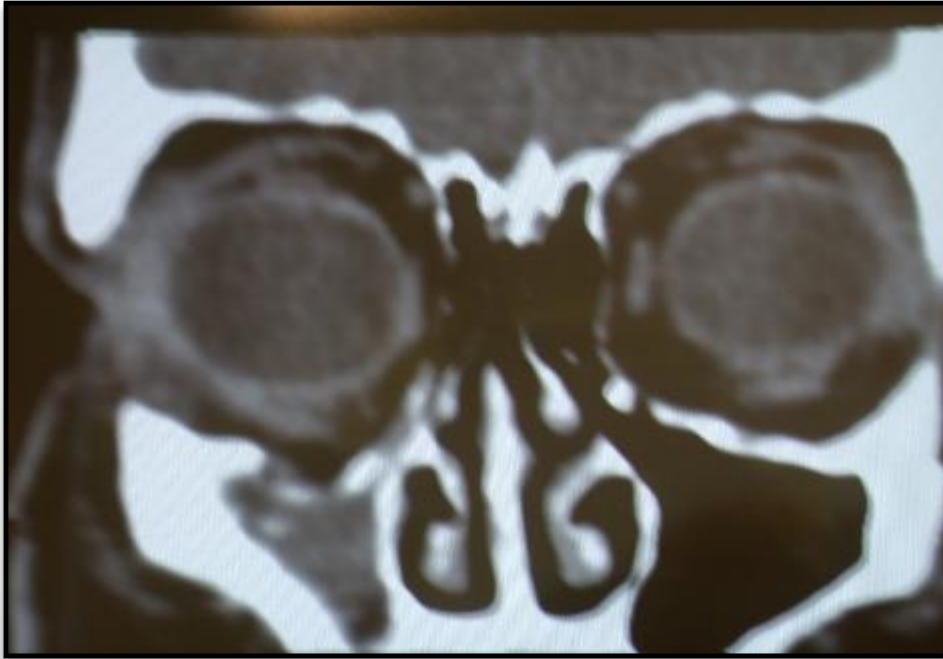
Orbital Fracture

Classical Signs:

- Hypotropia
- Enophthalmos
- Restricted motility, esp. vertical gaze
- Infra-orbital anesthesia



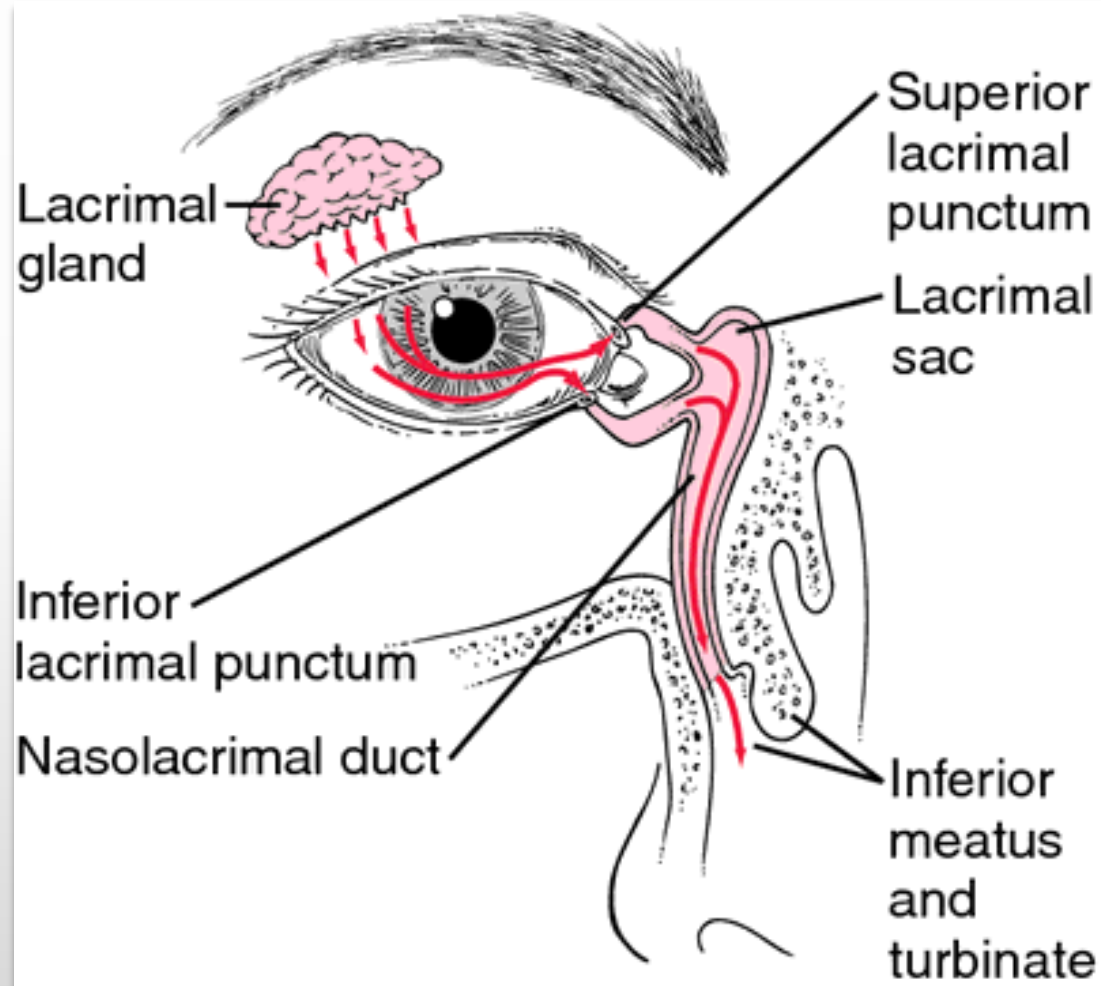
Orbital Fracture



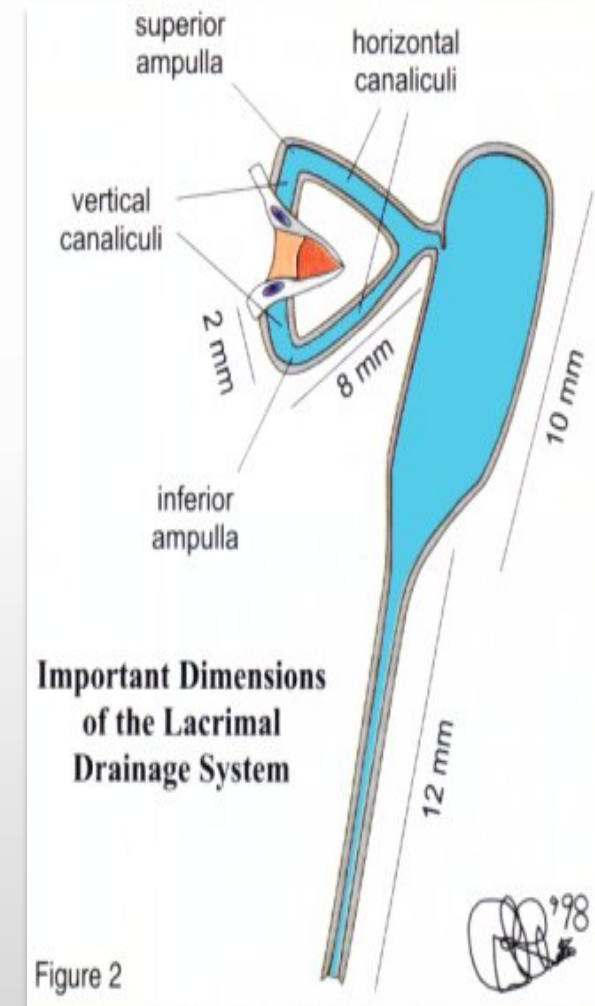
Orbital Floor fracture and prolapse of Inf. Rectus & soft tissues in maxillary sinus

Lacrimal Drainage System & Common Disorders

Anatomy of the Lacrimal Apparatus



Eyelid movement → lacrimal pump



Acute dacryocystitis



Complete block

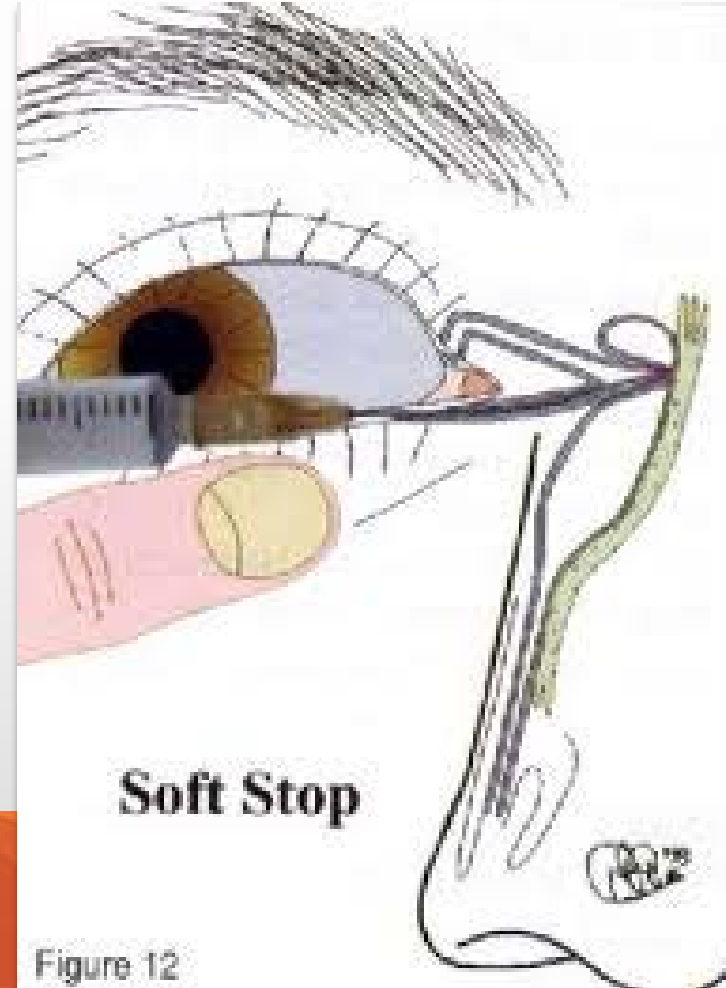
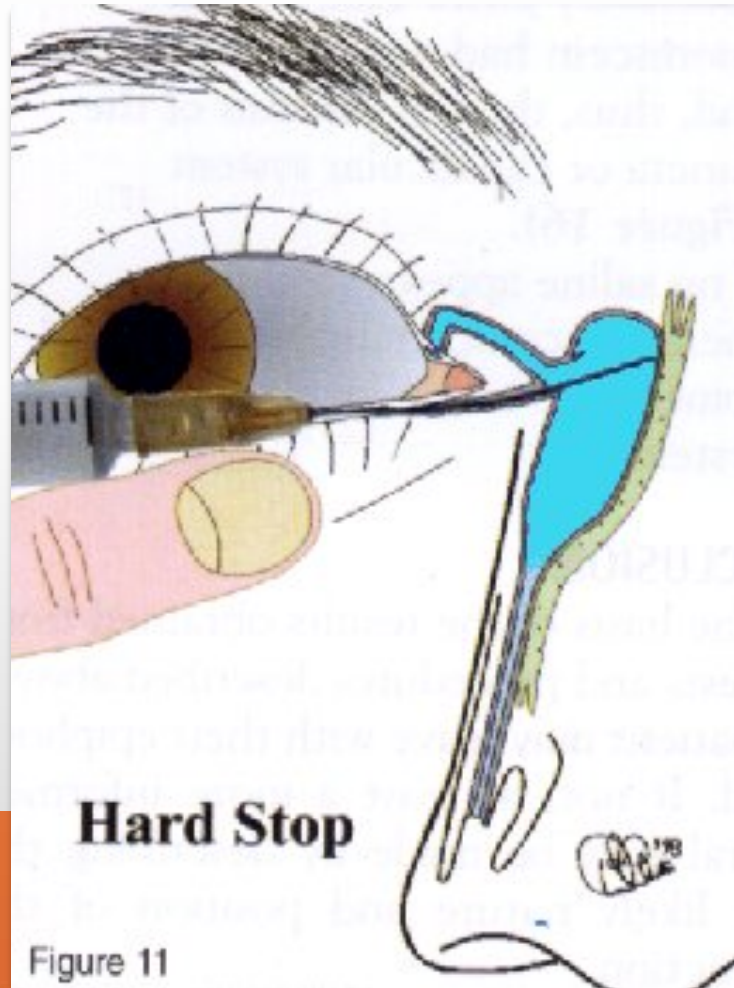


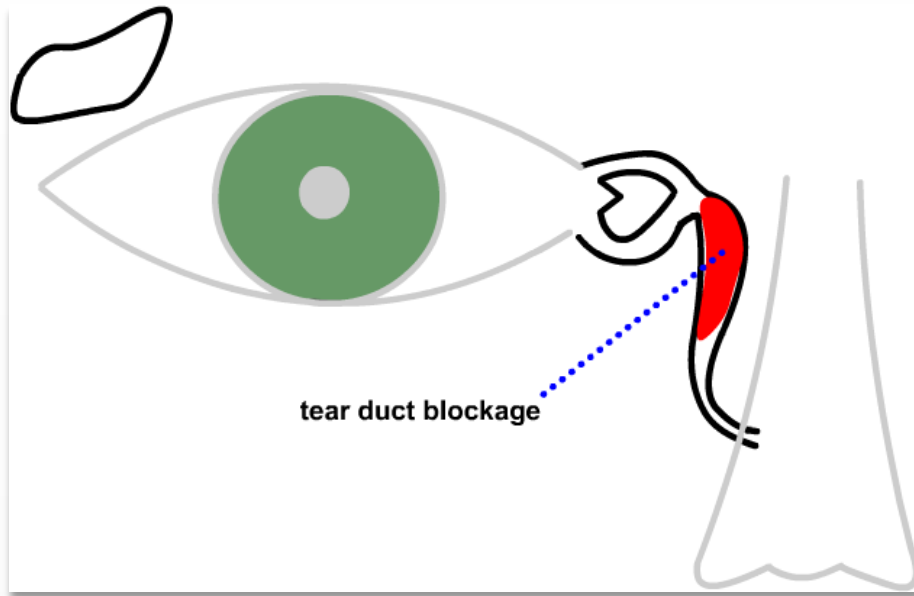
Stagnant tears in sac



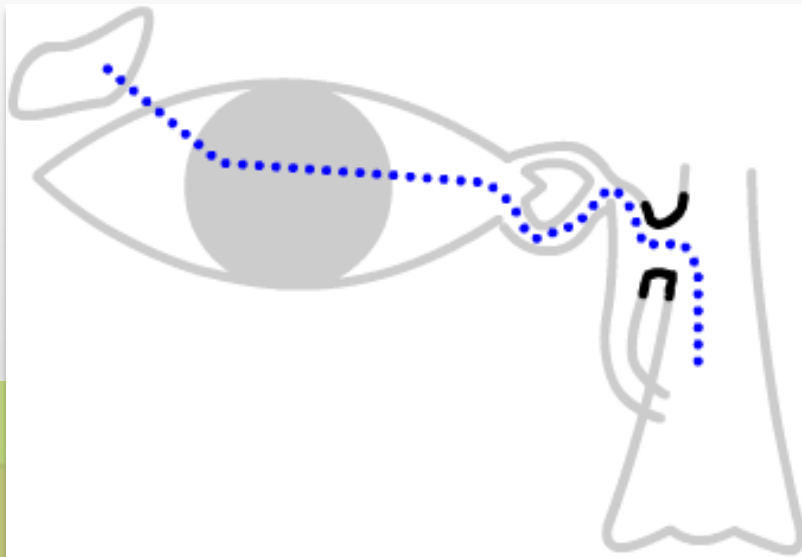
Recurrent infections

Where is the block? → Syringe & Probe



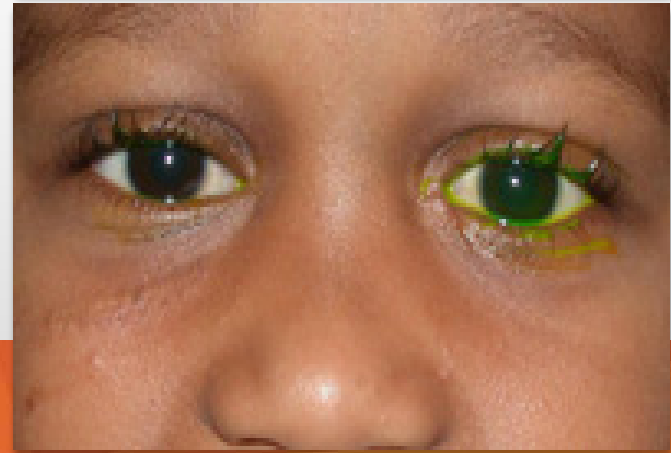


Dacryocystorhinostomy (DCR)



Congenital Naso-lacrimal Duct Obstruction

- Symptoms start soon after birth
 - - Watering $\pm$ discharge
- Fluorescein dye disappearance delayed



Congenital Naso-lacrimal Duct Obstruction

Treatment Options in order of preference:

- a) Conservative [Lacrimal Massage $\pm$ Antibiotics]
- b) Probing & Syringing
- c) Intubation/ Balloon Dacryoplasty
- d) Dacryocystorhinostomy



Nearly 95 % resolve conservatively by the end of one year of age

The End

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