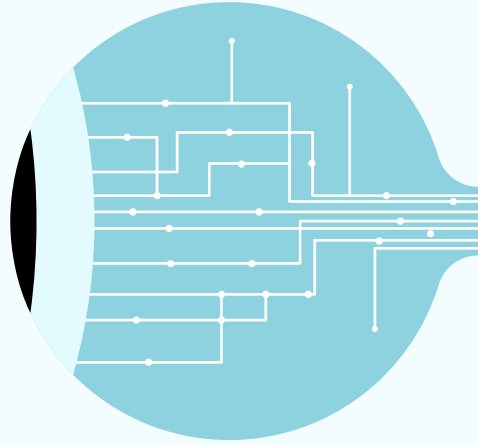


## Lecture 10



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# Lids, Lacrimal & Orbit Disorder

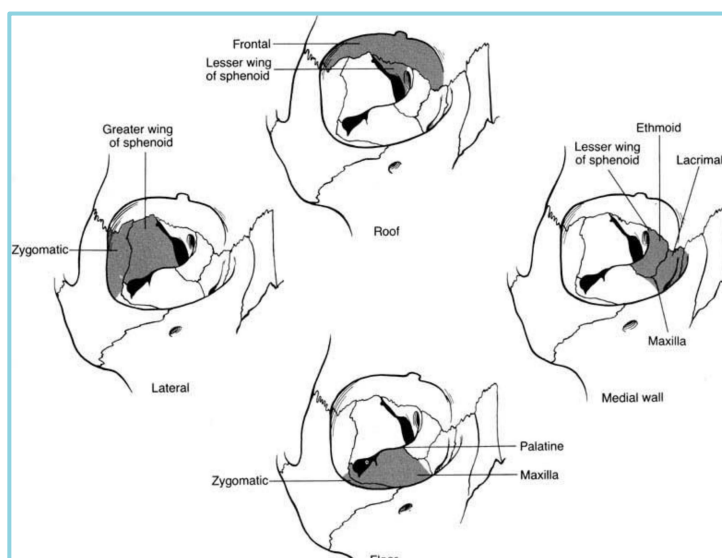
Presented by: Prof. Adel Alsuhaibani

## Objectives :

- To understand orbital anatomy and evaluation techniques for orbital disorders.
- To identify Eyelid and lacrimal drainage anatomy and evaluation techniques.
- Identify common and serious causes of proptosis, enophthalmos and treatment options available and investigations.
- To know how to investigate and approach different etiologies of eyelid swelling.
- Know how to manage certain types of eyelid malposition.
- Know the role of general practitioner in managing patients with epiphora.

## Color index:

# Anatomy of the orbit

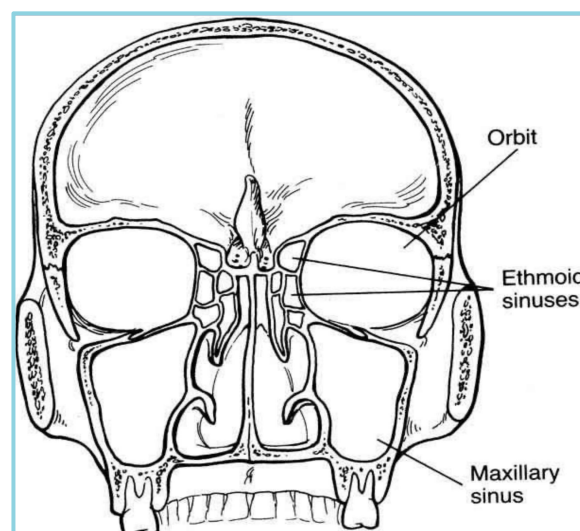


## Orbital walls:

- ◇ The orbit is formed by 4 walls; the orbital floor, orbital roof, medial wall, and lateral wall.
- ◇ The orbital roof is mainly formed by the frontal bone and lesser wing of sphenoid at the back of the roof of the orbit.
- ◇ The orbital floor is formed mainly by the maxillary bone medially and zygomatic bone laterally.
- ◇ The lateral wall is formed by the zygomatic bone anteriorly, and the greater wing of sphenoid posteriorly.
- ◇ The **medial wall** is the **weakest** and formed by the maxillary bone anteriorly, the lacrimal bone in the middle, the ethmoidal bone taking most of the medial wall, and in the far end there's a small piece formed by the lesser wing of sphenoid.
- ◇ **The strongest wall is the lateral wall and the thinnest wall is the medial.**
- ◇ The **thinnest** bone in the medial wall is the **ethmoidal** bone which is also called "**lamina papyracea**" and it is very thin! making it more prone to infections (orbital cellulitis secondary to **ethmoidal sinusitis** or if there is a fracture in the orbital wall so the air in the sinus will come in the orbit) to cross over from the sinuses to the orbit and for fractures to occur.
- ◇ The **thinnest** bone in the orbit is the **roof of the infraorbital canal**.

## Orbital sinuses:

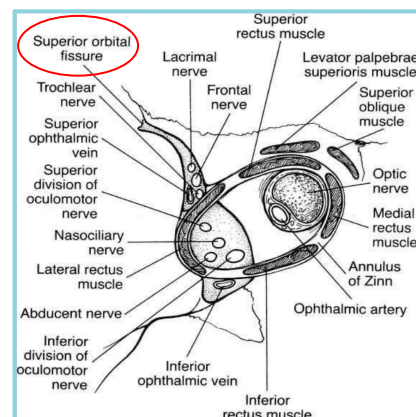
- ◇ The sinuses surround the orbit from 3 directions:
  - The maxillary sinus is below the orbit.
  - The ethmoidal sinuses and sphenoid sinus are medial to the orbit (beside).
  - The frontal sinus is above the orbit



# Anatomy of the orbit

## ❖ Blood supply:

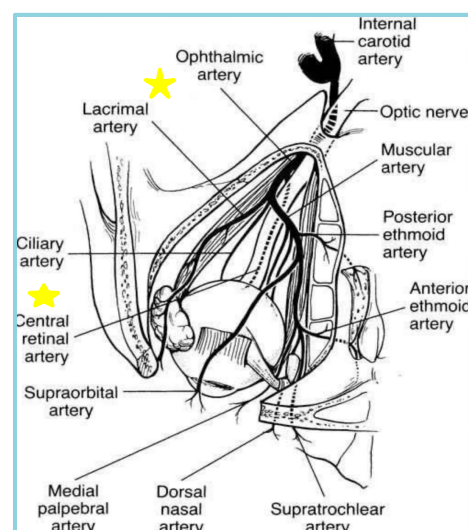
- ◇ The main blood supply for the orbit comes from the internal carotid artery which gives rise to the ophthalmic branch.
- ◇ The ophthalmic artery gets inside the orbit along with the optic nerve through? Optic canal and it gives many branches; the **most important** branch is the **central retinal artery** (because if there is any injury to that branch the patient will lose the vision permanently due to the occlusion)
- ◇ The central retinal artery **has no collaterals**, so if it gets occluded the patients will immediately **lose their vision**.



## ❖ Annulus of zinn:

- ◇ Annulus of Zinn is a ring of condense fibrous tissue, and it is the origin of all the recti muscles.
- ◇ It also contains the optic canal and the optic foramen. You can see the optic nerve along with the ophthalmic artery (pic 2).
- ◇ Inside the Annulus of Zinn there're also the nasociliary nerve, abducens nerve, and the superior and inferior divisions of oculomotor nerve. The abducens nerve supplies the lateral rectus muscle. The superior and inferior divisions of oculomotor nerve supply the rest of the recti muscles. The nasociliary nerve is a mixed nerve that carries sensation to the cornea and conjunctiva & controls the pupil. Also, it supplies the ciliary muscles & ciliary body as well as the tip of the nose. That's why when a patient presented with a herpetic infection that involves the nose, you must examine the eyes very well. Herpetic infections are transmitted along the nerves, so it could start at the nose and travel through the nasociliary nerve all the way to the eye. This is called **hutchinson's sign**; when involving the tip of the nose and the eye. You can also see the superior orbital fissure. Part of the superior orbital fissure is contained within the annulus of zinn (abducens, nasociliary and oculomotor) and the other part is outside the annulus.

- ◇ There are multiple vital structures that pass through the superior orbital fissure to get inside the orbit and to exit the orbit. Starting from the top there're the lacrimal nerve, frontal nerve, and the trochlear nerve.(remember it as **LFT**) The trochlear nerve innervates the superior oblique muscle. The origin of the superior oblique is outside the annulus of zinn which is why the trochlear nerve is outside the annulus of zinn. The lacrimal nerve supplies the lacrimal glands. The frontal nerve is a branch of the trigeminal nerve, and it is a sensory nerve. It gives sensation to the forehead and the whole scalp.



Pic 2

# Evaluation

## ◆ 7P's:

1. Pain.
2. Progression.
3. Proptosis. (cardinal sign of orbital pathology)
4. Palpation.
5. Pulsation.
6. Periorbital changes.
7. Past medical history.



## 1. Pain:

- ◇ Infection.
- ◇ Inflammation.
- ◇ Hemorrhage.
- ◇ Malignant lacrimal gland tumor (most tumors are painless in the orbit).

## 2. Progression: **imp**

- A. **Minutes to Hours** (if progression occurred within minutes to hours, there are only a few things that you need to think about):
- **Hemorrhage sudden**
  - **Orbital emphysema:** air in the orbit, usually reduces by itself, It usually occurs due to trauma which results in a communication between the sinuses and the orbit. It increases the pressure in the orbit, and it can cause compression of the optic nerve and most importantly the central retinal artery which could cause blindness. If a patient presented to the ER with a medial wall floor fracture, it's important to tell the patient to not blow their nose or cough (Valsalva maneuver) because the air can go from the sinuses to the orbit and it can increase the orbital pressure.
  - **Lymphangioma**  
Congenital hamartoma: abnormal lymphatic vessels that are present in the orbit that tend to bleed, so the patient may present with acute proptosis.
  - **Varix** (upon Valsalva) occlusion, dilation or thrombosis of venous system.
    - Varicocele in the orbital veins that also tend to bleed & thus patients may present with acute proptosis. Venous system malformed



# Progression

## B. Days to Weeks

- Children: **capillary hemangioma**, rhabdomyosarcoma, retinoblastoma, neuroblastoma, leukemia.
- Inflammatory disease: Idiopathic orbital inflammatory disease, thrombophlebitis, thyroid orbitopathy, recurrent inflamed dermoid.
- **Infections**: orbital cellulitis, abscess, cavernous sinus thrombosis. 1 day or 2 not hours
- Trauma, post-surgical, hemorrhage: orbital hemorrhage, lymphangioma. (Acute or late)
- Malignancy: rhabdomyosarcoma, metastasis, granulocytic sarcomas, adenoid cystic carcinoma.
- Carotid-cavernous (C-C) fistula.

## ◆ Infection

- ◇ **The orbital septum is the anterior boundary of the orbit, so anything anterior to the orbital septum is considered extra-orbital.**
- ◇ **Preseptal Cellulitis: the infection is anterior to the orbital septum**
  - Vision, motility, pupils, VF, disc are WNL (within normal limit)
  - Globe itself is not proptotic (the eyeball itself is in a normal position).( usually treat it with oral AB as an outpatient)
- ◇ **Orbital Cellulitis: the infection is behind the orbital septum.**
  - 90% secondary to sinus disease.
  - High risk of morbidity and mortality
    - Orbital abscess. If untreated
    - Brain abscess. If untreated
    - Cavernous sinus thrombosis.
- ◇ **Treatment: EMERGENCY**
  - Admission for close observation.
  - Referral to ENT & infectious diseases.
  - **Systemic antibiotics** and surgery if needed.
- ◇ Both preseptal cellulitis and orbital cellulitis present with eyelid swelling, redness, and pain , and both are general terms (signs) not actual specific diseases
- ◇ So, how can you differentiate between the two? patients with preseptal cellulitis are typically afebrile, healthy looking, and no signs of abnormalities in the eye and they can be treated with oral abx outpatient; However, patients with orbital cellulitis could be febrile, sick looking, and they have abnormalities in vision, eye motility, eye position (proptosis), or decreased disc.
- ◇ **Triad of inflammation/Infection process: Tender, Redness, Hotness**
- ◇ For example, if a patient presented with eyelid swelling, redness, pain, along with proptosis → this is orbital cellulitis.
- ◇ What is the most common cause of orbital cellulitis? Sinusitis , this is why.. Infections can easily cross-over especially through the **medial wall through the lamina papyracea ! the thinnest bone in the medial wall!**



# Progression

## C. Months to Years (benign conditions)

- Dermoid Cysts.
- Benign mixed tumors.
- Neurogenic tumors.
- Glioma, lymphoma & meningioma
- Cavernous hemangioma
- Osteoma
- Lipoma
- Fibrous histiocytoma

### ❖ Capillary hemangioma

- ◇ Usually in children.
- ◇ **Senario:** A 4 months old baby, the family noticed something started on his eye at age of 2 months and decreasing? Dx Capillary hemangioma
- ◇ We need to treat it because they can develop amblyopia or vision loss if left untreated. We need for the visual development to have a clear visual axis earlier in life, because if we block the visual axis, they will develop amblyopia and it will be difficult to treat later in life.
- ◇ **Treatment: beta blockers (1st line).** It's safer with less side effects and usually enough. If they don't respond to beta blockers, we give them steroids injection or systemic steroids → if no resolution, laser treatment or surgical excision.
- ◇ It enlarges in size until age 3 or 4 then it regresses by itself by age of 5 or 6 years.



Cavernous  
Hemangioma  
Usually in adults



A benign tumor of the blood vessels or capillary which leads to the formation of **capillary hemangioma**

# Proptosis

## Bilateral

Seen in inflammatory conditions (typical condition is thyroid eye disease in Grave's)  
Immune processes or systemic diseases

## Unilateral

Primary orbital neoplasms usually unilateral  
(mass occupying lesion)

## Causes

### Inflammatory

- **Thyroid disease**  
**Most common**
- Orbital pseudotumor
- Wegener granulomatosis

### Infection

- Orbital abscess
- **Cellulitis**

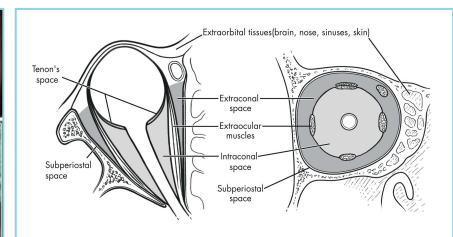
### Vascular

- Orbital hemorrhage
- Lymphangioma (sudden)
- C-C fistula
- Orbital varices - proptosis with valsalva.
- Cavernous hemangioma

### Neoplasm

- **Benign:**
  - cavernous hemangioma
  - lymphangioma
- **Malignant:**
  - adenoid cystic carcinoma
  - lymphoma
  - glioma
- **Contiguous:**
  - sinus
  - intracranial nasopharynx
  - skin
- **Metastatic:**
  - lymphoma
  - leukemia
  - neuroblastoma
  - Rhabdomyosarcoma

- Proptosis can be either:
  - **Axial**
  - **Non-axial**
  - **Pulsatile.**



## ❖ Pseudoproptosis:

- ◇ Sometimes when the eyes are wide open, you might think that the patient has proptosis but actually they have lid retraction).
- ◇ We differentiate pseudoproptosis and proptosis by using exophthalmometer
- ◇ **The most common cause for enophthalmos is trauma.** When there's a medial wall or an orbital floor fracture, some of the orbital contents will herniate into the maxillary sinus which will make the orbital space larger, and as a result the eye will sink in.



The patient has lid retraction. You can see the sclera clearly under the upper eyelid.



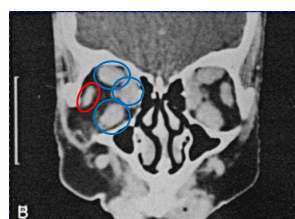
One eye is sunken in → enophthalmos of the left eye

# Proptosis

## Inflammatory

### Graves disease

- Most common cause of **unilateral** or **bilateral** proptosis.
- May occur with any thyroid status.
  - It can happen with hyperthyroidism, euthyroidism, or hypothyroidism, but most commonly with hyperthyroidism.
- Eye disease not controlled by thyroid ablation (because Graves' disease is autoimmune disease, there are antibody antigen reaction in the orbit stimulating the thyroid gland, so even if the thyroid is removed there are still antigens in the bloodstream. Thyroidectomy or radioactive uptake won't fix).
- Strabismus due to abnormality in the extraocular muscle due to accumulation of the inflammatory changes especially glucose aminoglycan as a result of antigen antibody reaction
- lid retraction (Most common presentation of graves)
- Lid lag when you ask the patient to look up and down and the eyelid is will be lagging behind the eyeball
- Visual loss because of corneal ulceration
- Cosmetic
- **Treatment options:**
  - Steroids. (If it is active and severe inflammation)
  - Radiation (to the orbit to control the inflammatory process).
  - Optic nerve decompression (surgery, if failed medical treatment).
  - Immunomodulators.
- CT scan: A patient with an active thyroid eye disease has multiple **extraocular muscle enlargement**.
- The most common muscles to be affected are the medial rectus and inferior rectus. They may develop strabismus, lid retraction, lid lag, and visual loss.
- Visual loss can occur due to corneal ulceration or exposure keratopathy or compression of the optic nerve that is caused by the huge extraocular muscle → compressive optic neuropathy.
- Second picture: chemosis (swelling) is seen with lid retraction. Because of severe proptosis, the patient cannot close his eyes.



normal EOM  
Enlarged EOM

### Sarcoidosis

- Lacrimal gland.

### Vasculitis

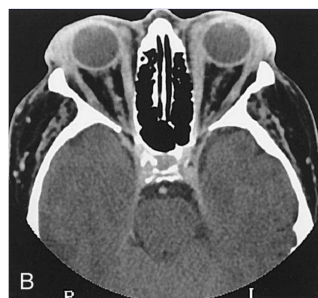
- GCA, PAN, SLE, Wegener's granulomatosis, RA.



# Proptosis

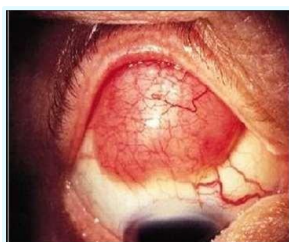
## Idiopathic Orbital Inflammation

- Other name: Orbital pseudotumor.
- Myositis.
- Prompt response to steroids.
- OU or systemic think vasculitis (\*except in kids).
- **(diagnosis of exclusion)**
- Usually present with pain, proptosis, eyelid swelling, involvement of any orbital structures



## Lymphoproliferative Disorders (space-occupying lesions)

- Lymphoid hyperplasia and lymphoma (2nd most common cause for orbital pathology)
  - 20% of all orbital mass lesions
  - Salmon patch appearance (reddish mass Under the eyelid, in the lacrimal gland usually)
  - Molds to orbital structures
  - 50% arise in lacrimal fossa
  - 17% bilateral
- We usually treat it with chemotherapy (rituximab) and radiotherapy
- Plasma cell tumors
- Histiocytic disorders
  - Macrophage based d/o.



Salmon patch under the eyelid raising from the lacrimal gland



Enlarged lacrimal gland

## ❖ Evaluation: Levator Function Not mentioned

- ◇ (this is the way we evaluate the muscle)
- ◇ We ask the patient to look all the way down, and then we measure how much they go up. Normally it should be 15 cm and above, like in this picture.



# Proptosis

## ❖ Dermatochalasis (pseudo-ptosis)



There's excess skin hanging over the eyelid



Before and after blepharoplasty



Before surgery

After surgery



## Brow ptosis



The eyelid opening is normal, but the brow is drooping.

## Unilateral Brow ptosis



The most common cause for unilateral brow ptosis is facial nerve palsy. (Always consider it when ptosis is unilateral). The frontalis muscle of the eyebrow is supplied by the facial nerve.

## 4. Palpation:

Not an orbital pathology, but very common to see



- Patient presented with a mass outside the orbit → **dermoid cyst** (very common)
- Dermoid cyst tend to occur at the suture line
- **TREATMENT: Excision**, but we do it later on life not in the first year, I wait for example 2-3 yrs
  - For a better anesthesia outcome, prevent cyst rupture leading to severe inflammation



## 5. Pulsation:

Not mentions

- **With bruits :**
  - Cavernous carotid fistula Orbital
  - Arteriovenous fistula
  - Dural-Arteriovenous (a-v) fistula.
- **Without bruits:**
  - Meningoencephalocele.
  - Neurofibromatosis.
  - Orbital roof defect (condition after surgical removal of orbital roof, sphenoid wing dysplasia).



## Pre-orbital change



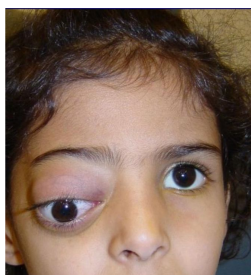
This patient had a tumor ( squamous cell carcinoma) removed from the cheek, but he had a recurrence. The right eye is pushed up because of the tumor recurrence.



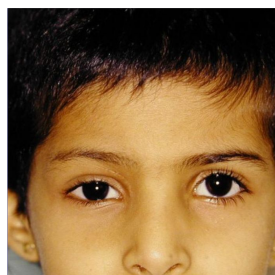
Encephalocele Right eye

### Rhabdomyosarcoma (VERY IMP)

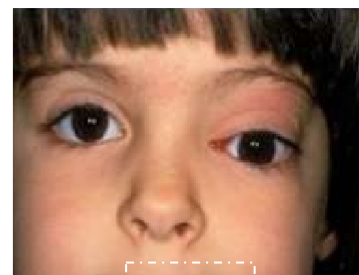
- Most common primary orbital malignancy of childhood.
- Average age: 7-8.
- Present with Sudden onset and rapid evolution of unilateral proptosis (within day to weeks)
- **Emergency.**
- 90% survival, if you treat it before metastasis happens.
- **Any child with unilateral proptosis that progressed within a few days → you need to consider it as a medical emergency.**
  - Unilateral proptosis is an important sign for rhabdomyosarcoma, leukemia, and other malignant tumors. In other words, unilateral proptosis is a sign of a bad (malignant) disease.
  - If a pt presented with pain, swelling, and redness → orbital cellulitis.
  - **If they don't present with any symptoms except for unilateral proptosis → Rhabdomyosarcoma.**
  - What's the difference between retinoblastoma and rhabdomyosarcoma? retinoblastoma is more common and they only present with proptosis in late stages. Retinoblastoma occurs in the orbit only whereas rhabdomyosarcoma can occur in other parts of the body.
  - 1st & 2nd picture: This patient was presented with a huge proptosis that developed within 2 weeks. Because the patient came to the hospital early, it was unlikely that she had any metastasis. **An incisional biopsy was taken to confirm** the diagnosis and she was treated with chemotherapy and radiation therapy. The 2nd picture is the same patient after one year. In conclusion, you can save the patient's life if you diagnose them early.



Pic 1



Pic 2



Pic 3

### Optic nerve glioma

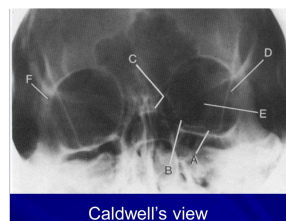
- In pediatrics, diagnostic of neurofibromatosis

# Past medical history

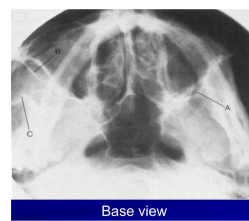
- Past medical history is very important, because for example, if a patient with a known history of Graves' disease was presented with proptosis, then it's most likely related to Graves' disease.
- If a patient with a known history of chronic sinus disease was presented with eyelid swelling and proptosis, then it's most likely orbital cellulitis.
- **Imaging Option:**
  - Plain films **not used anymore**, we only use it if we suspect metallic foreign body in the orbit.
  - CT scan **helps showing the bone and the soft tissue**. Most common used eg: trauma
  - MRI **best to visualize soft tissue**.
  - Ultrasound **not as good as MRI and CT scan**.

## Plain film

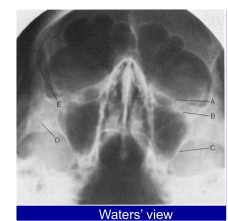
- Quick In ER
- R/o foreign bodies
- Infrequently used



Caldwell's view



Base view



Waters' view

## CT Scan (most commonly used)

### Strengths

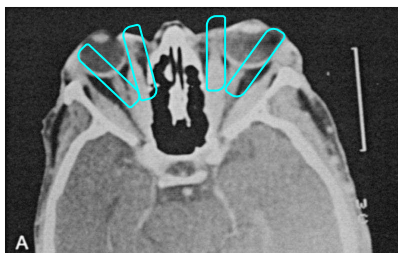
- Spatial resolution.
- Bone: fracture, destruction, calcification.
- Quick: emergencies trauma.
- Cheaper.

### Weakness

- Radiation: 1-2 cGy. Risk for 2dry tumor especially in children
- Soft tissue definition.
- Contrast iodinated: avoid it in case of allergy.
- May need MRI anyway (not cheaper)

### Protocols

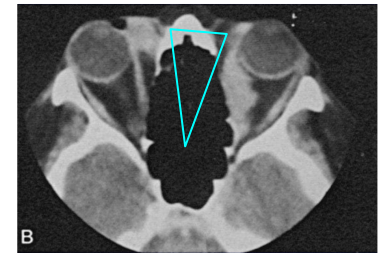
- Axial and coronal.
- +/- Contrast.



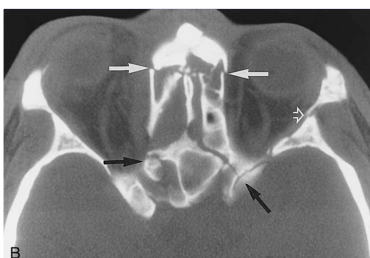
- This patient has an active thyroid eye disease (Graves).
- You can see enlargement of the extraocular muscles
- Axial image



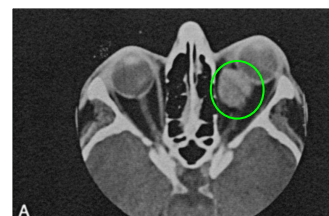
Coronal image of enlarged extraocular muscles



- Axial image
- Single extraocular muscle enlargement. Less likely caused by Graves disease.
- More likely caused by other inflammatory causes, or a tumor.



Multiple fractures are seen. (arrows)



This patient has an orbital mass behind the eyeball.

- Differential diagnosis:**
1. Optic meningioma
  2. Cavernous hemangioma
  3. Lymphoid hyperplasia

# Past medical history

## MRI

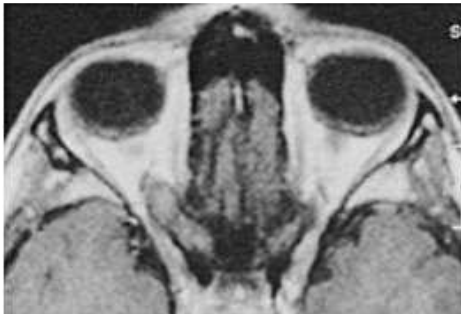
Strengths	Weakness	Protocols
<ul style="list-style-type: none"> <li>• Tissue.               <ul style="list-style-type: none"> <li>◦ T1 anatomy</li> <li>◦ T2 pathology</li> </ul> </li> <li>• No radiation</li> </ul>	<ul style="list-style-type: none"> <li>• Magnetic: pacemakers, surgical clips</li> <li>• Claustrophobia</li> </ul>	<ul style="list-style-type: none"> <li>• Axial/coronal/sagittal</li> <li>• Gadolinium contrast               <ul style="list-style-type: none"> <li>◦ Non-iodinated.</li> <li>◦ Allergies RARE</li> </ul> </li> <li>• Orbital lesions.</li> <li>• Fat suppression (allows you to see the structures inside the orbit clearly)</li> </ul>

### Examples

- How to differentiate between T1 & T2?
  - In T1 the fluid appears dark, which is why the eyeballs are black in T1; In T2 the fluid appears bright, which is why the eyeballs are white in T2

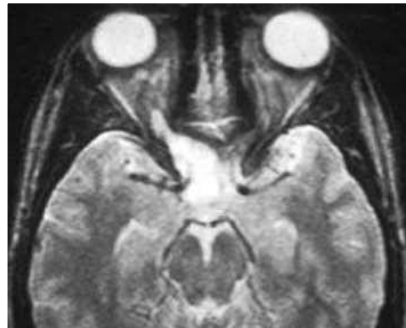
#### T1

- No fat suppression.
- **Orbital structures cannot be seen. Cuz orbit is full of fat!**
- Dark eyeballs = T1.



#### T2

Bright eyeballs = T2.



#### T1

- With fat suppression.
- The orbital structures can be seen clearly.
- Dark eyeballs = T1.

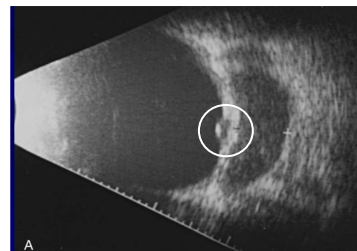


## Ultrasound (Orbital Echography)

### Features:

- Dynamic.
- Less expensive.
- +/- Availability variable.

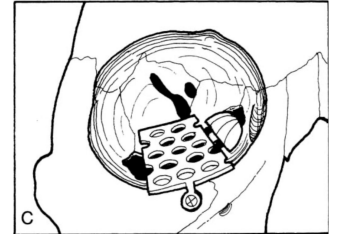
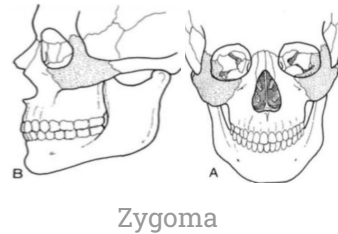
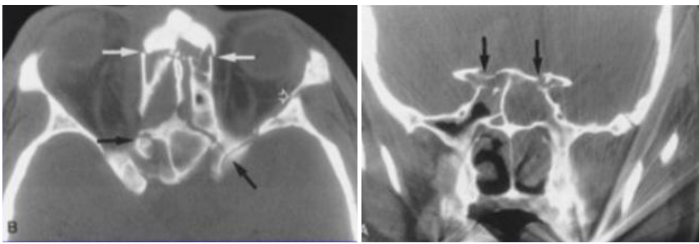
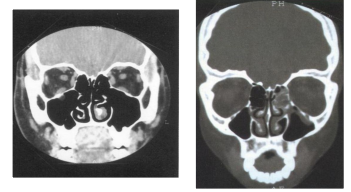
This is an ultrasound showing an orbital cyst behind the eyeball



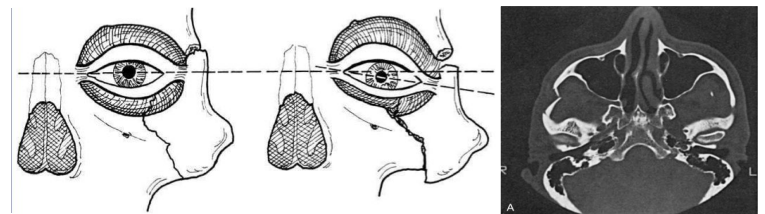
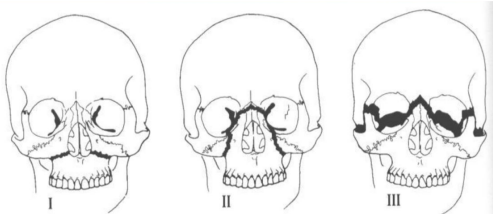
# Facial trauma and fractures

- **Dr: Very big topic, Am only gonna touch on orbital floor fracture with rim involvement**

- Midfacial fractures.
- Zygomaticomaxillary Complex (ZMC) fracture.
- Wall and floor fractures:
  - Medial wall: lamina papyracea.
  - **Orbital floor: blow out** vs rim involvement (blow out fractures can easily be missed, especially in children).
  - Lateral wall and orbital roof (less common).
- Optic canal fractures:
  - Traumatic optic neuropathy.



- Optic canal fracture:
  - May be with or without displaced bony fragments



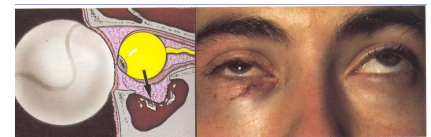
ZMC fractures

Pic 1

- LeForte fracture:
  - Class 1: transverse maxillary
  - Class 2: pyramid
  - Class 3: craniofacial disjunction



Blow out fracture



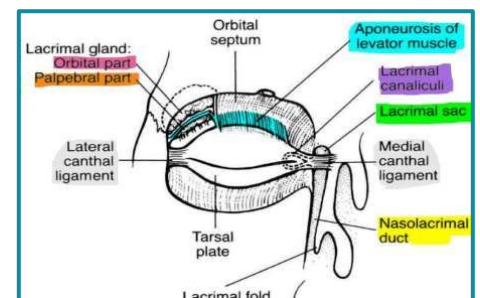
## Floor Fractures

- **1st picture:** This boy had a trauma in his right eye at school. He was taken to a general emergency room. There was no pain in his eye, no redness, and no swelling. And because of that he was discharged, but the boy was still complaining.
- In the picture you can see that when he tries to look up, the right eye looks abnormal because there's **entrapment of the inferior rectus muscle** caused by a small fracture, so **he cannot look up**. This type of fracture that causes muscle entrapment typically happens in **children more than adults because the bones are more elastic**. This causes small fractures that will cause some of the orbital contents to herniate and then they'll get entrapped.
- So, **it's very important to check the eye motility in every patient that presents with orbital trauma** because it's tricky to pick up this kind of fracture if you don't check the eye motility.
- No entrapment: enophthalmos.
- **This patient needs urgent surgery because if the muscle remains entrapped, there will be necrosis and he'll end up with permanent double vision**. Another thing that can happen if the muscle remains entrapped is oculocardiac reflex, which means that they can develop abnormal cardiac rhythm.

# Lacrimal Disorders

## ❖ Structure and Function:

- ◇ It is situated superior-temporally behind the orbital rim.
- ◇ It can be divided into two main parts:
  - **Orbital:** larger and sits on the lateral margin of levator palpebrae.
  - **Palpebral:** smaller and located along the inner surface of the eyelid.
- ◇ We have accessory lacrimal gland present in the upper and lower fornix nearby tarsal plate. However, the main tear production comes from lacrimal gland which is present in the anterior lateral superior part of the orbit.
- ◇ The two lobes are separated by levator aponeurosis, which is the tendon for levator muscle.



## ❖ Physiology:

- ◇ From the palpebral part of the lacrimal gland there are small ductioles secreting the tears to lubricate the eye, these ductioles open into the superior fornix, the tears will lubricate the cornea, and then will be drained through the lacrimal drainage system starting with the lower punctum which is a small round opening and upper punctum, and from there, there are small ducts called canaliculi (canaliculus).
- ◇ The upper and lower canaliculi will meet to form common canaliculus, then it will go inside the lacrimal sac, then from the lacrimal sac the nasolacrimal duct will take the tears to the inferior meatus.
- ◇ The canthal ligaments attach the eyelid to the bone. There are two canthal ligaments; the medial canthal ligament, and the lateral canthal ligament. The lacrimal sac is behind the medial canthal ligament.

## ❖ Examination

- ◇ The eyelids, The dynamics of eyelid closure, The puncta, The marginal tear strip, The lacrimal sac, Dye Disappearance Test, Probing and irrigation, Jones dye test Radiography

## ❖ ★ Congenital Lacrimal Duct Obstruction (common problem)



- ◇ One of the most common conditions that a child can present with is **tearing and chronic discharge (they must have tearing+discharge)** If only tearing? Think of something else like foreign body, eyelash miss directed or congenital glaucoma  
The reason why they accumulate tears and have discharge is because they have **delayed canalization** of the nasolacrimal duct.
- ◇ **Identify the site of obstruction:** Commonly the delayed canalization happens at the valve of Hasner at the distal end of the nasolacrimal duct. The nasolacrimal duct has a membrane that's supposed to be perforated before birth, but some children present with delayed membrane perforation.
- ◇ Another cause for the discharge is the lacrimal sac is lined with mucus secreting cells. In children with a perforated nasolacrimal duct, the mucus goes to the nose. Whereas in children with this condition, the mucus cannot go to the nose and, so it will accumulate in the eye. They can be presented with unilateral or bilateral excess tearing and discharge.

# Lacrimal Disorders

- ❖ **Symptoms:** In congenital lacrimal duct obstruction, **in the first 6 months**, the tears will accumulate in the lacrimal sac because of the obstruction (**continuously watery eyes**), and eventually there will be discharge because the accumulation of tears in the lacrimal sac is a media for infection so the child will present with a chronic low-grade infection.
- ❖ **Signs:** discharge (pus) but the conjunctiva is white not red, eyelashes sticking together. Can be unilateral or bilateral
- ❖ **Management:**
  - **Massage:** To treat this condition, we usually ask the parents to massage the area above the medial canthal ligament regularly until the age of 1. **90% improve with massage!** 10% don't, here we do surgery in form of Probing
  - **Probing:** If the patient was presented after the age of 1, the chances of opening the duct through massaging the area is really low, so we go for probing to perforate the membrane.
  - Probing + Stent
  - DCR
- ❖ If a child presents with tearing but no discharge, you need to think about congenital glaucoma, eyelashes rubbing against the cornea, foreign body causing irritation or absence of the punctum of the lacrimal sac.

This patient has an acute nasolacrimal duct obstruction, which wasn't treated well, so he developed **acute dacryocystitis**, it is a form of an acute infection in the lacrimal sac. If acute dacryocystitis wasn't treated, the patient will develop orbital cellulitis. **Presentation** : acute redness, swelling, and pain in the area of the lacrimal sac. Also, tearing and discharge.



**Treated by:** system antibiotic plus topical antibiotic and drainage of abscess.

after the resolution of infection we need to open the nasolacrimal duct So the infection won't happen again.

**In adults** with lacrimal drainage problems, we do lacrimal irrigation to detect where the obstruction is, and to introduce a cannula through the punctum all the way to the lacrimal sac. Then push a fluid and if the lacrimal drainage works, the patient will feel a fluid inside their nose and throat.

**In children**, we do a fluorescein dye (diagnostic dye eye drops) and wait 5 minutes; if the dye is still apparent then the lacrimal drainage is compromised.

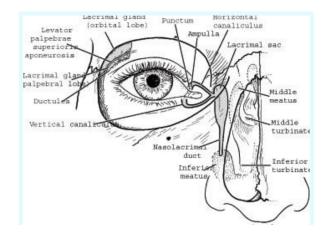
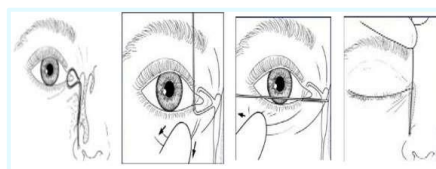
We do fluorescein dye in adults to locate the obstruction:

- the obstruction is in the canaliculi = if you can't reach the nasolacrimal duct.
- the obstruction is in the duct = if you can reach it.

The exact location of the obstruction can be confirmed by injecting a radio-opaque dye into the nasolacrimal system (dacryocystogram).



**What is probing?** In children, probing is done. A metallic probe is introduced through the punctum, and then through the canaliculus, and then all the way down to the nose so it can perforate the membrane. Sometimes, a stent made of silicone will be placed to prevent the membrane from reforming and it will be removed after a few months.





# Lacrimal Disorders

## ❖ INFECTIONS OF THE LACRIMAL PASSAGES

Dr. mentioned it in a hurry

### ❖ Acute dacryocystitis

- Symptoms
- Signs
- Complications
- Treatment:
  - Systemic antibiotics
  - Stab incision
  - DCR

### ❖ Chronic Dacryocystitis:

- Symptoms: epiphora + mucopurulent discharge
- Signs:
  - painless swelling
  - +ve regurgitation test
- Treatment:
  - DCR
  - probing and irrigation

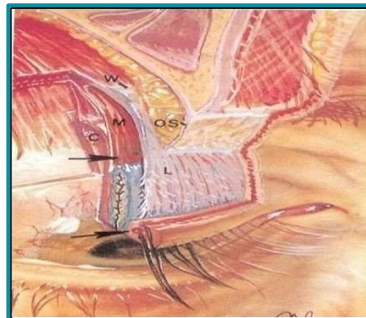
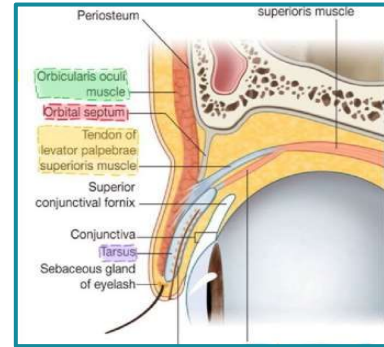
## ❖ ★ Dry eye

- A symptom, not a disease, so you have to look for the cause.
- **Causes:** Laser surgery, Contact lens, all CNS-acting medication, beta-blockers, estrogen-containing medications (testosterone is opposite)
- **Signs & Symptoms:** Tear meniscus, Tear BUT test, Schirmer test, SPK and Rose Bengal stain.
- Treatment:
  - Preservation of tear: decrease the drainage
  - Lubricants (do not use lubricants if there is no indication, why? it actually causes suppression of normal production. (Nothing mimic normal lubrication))
  - Punctal plugs if patient is not expected to recover
  - Permanent occlusion
- **Complications:** superficial punctate keratitis: corneal epithelial damage leading to inflammation as a result of severe dry eyes

# The Eyelids

## ❖ The upper eyelid anatomy:

- ◇ From outside: skin → (supplied by facial nerve) → orbital septum (a dense fibrous tissue) → orbital fat (also called preaponeurotic fat) → levator muscle which will be changed to tendon called levator aponeurosis, will attach to tarsals Muller muscle of conjunctiva.
- ◇ Tarsal is a condense fibrous tissue that is forming the skeleton of the eyelid, within tarsals are meibomian glands: fat secreting (sebaceous) glands, opens on the lid margin. **forming the fatty layer of the tear film around 35 in the upper lid and 25 in the lower lid.**
- ◇ The important thing in the orbital septum (anterior boundary of the orbit).
- ◇ Anything behind the orbital septum = orbit = intra orbital, anything anterior to the orbital septum = extra-orbital = preseptal.
- ◇ **What is the difference between levator muscle and Muller muscle ?**
  - They both elevate the eyelid. however, they differ in the nerve supply & the type of muscle levator muscle is a skeletal muscle supplied by the oculomotor nerve, and **muller** (AKA superior tarsal muscle) muscle is a smooth muscle supplied by sympathetic nerves.



M = müller muscle  
OS = orbital septum

## 1 Allergic Eyelid Swelling

- Allergic swellings are very common, mainly due to insect bites and irritants. Not infection. Not inflammation
- Not every eyelid swelling is infection, **so how can you differentiate between swelling due to allergy or infection?**  
Recall the triad of infection slide (5): Tender, hot and red
- By history taking and clinical examination, typically allergic eyelid swelling develop suddenly with sudden onset of huge lid swelling and edema collection which occur few minutes to few hours, preseptal cellulitis develop gradually and take few days to develop and present with severe picture
  - **Preseptal cellulitis (infection)** presents with redness, warmth, swelling and tenderness.
  - **Allergic eyelid swellings (only swelling)** are not tender, red, or warm. For example, if a patient suddenly woke up with a huge swelling and itching & Presence of the trigger & Previous episodes (recurrence) most likely due to allergy because preseptal cellulitis takes time to develop.
- **Treatment:** Antihistamine and cold compressor, if no response? Give steroid



# The Eyelids

## 2 Eyelid Trauma

- Types: Blunt, sharp/penetrating
- If one or all of the following involved in an eyelid trauma call ophthalmology (lid margin, canthal, canaliculi).

### ❖ Classification:

- ◇ **The lid margin is spared** (not involved): **examine eyelid**
  - Skin and orbicularis only injured → skin sutures. **You don't need to suture the orbicularis muscle; you only need to suture the skin.**
  - FAT protrusion = septum violated, **DO NOT** suture the orbital septum. **You need to do a thorough evaluation of the eye to rule out eyeball (cornea and globe) laceration.**
- ◇ **The Lid margin involved:**
  - You need to suture the lid margin properly and meticulously because if the suturing wasn't properly done, the cornea will be irritated with every blink and Causes corneal ulceration.
- ◇ **The canthals involved:-** call ophthalmology
  - You need to call ophthalmology because the medial and lateral canthal ligaments are what stabilize the eyelid. If the canthal ligaments are injured, they need to be sutured to their proper positions to avoid any eyelid abnormalities.
- ◇ **The canaliculi involved:** duct from the eye to the lacrimal sac
  - You need to call ophthalmology immediately because you need to treat the patient with suturing the canaliculus and putting a stent or a silicone tube through it to avoid permanent closure of the duct, This needs to be done acutely.
  - You will remove the stent after a few months.



Lid laceration medially with canalicular involvement.

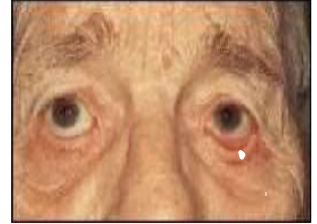
A metallic probe (called Bowman probe) is introduced through the punctum.+ silicone stent

# The Eyelids

## 3 Eyelids Malposition

### ❖ Ectropion

- ◇ Outward turning of lid margin (the eyelid is becoming so lax that it is turning away from the eye).
- ◇ **Types:**
  - Congenital.
  - Involutional (aging).
  - Paralytic (facial nerve palsy → orbicularis muscle paralysis).
  - Cicatricial. Scarring of the eyelid
  - Mechanical
- ◇ **Complications:** severe dryness, watery eye lacrimation (epiphora)
- ◇ **Treatment:** surgical



### ❖ Entropion

- ◇ Inversion of the lid margin (the eyelid is turning towards the eye) the lashes irritate the cornea and conjunctiva
- ◇ **Types:**
  - Involutional (aging): Because of eyelid laxity some patient may have tendency for lid margin to turn toward the eye and rub against the cornea and ocular surface
  - Congenital.
  - Acute-spastic.
  - Cicatricial
- ◇ **Complications:** severe dryness
- ◇ **Treatment:** corrective entropion surgery

### ◇ Cicatricial

- Happens as a **sequela of trachoma** which used to be a common infection in our area years ago.
- **Typically start** with eye redness and discharge, if it's not treated it will lead to scarring in the conjunctiva and this typically we see it when we evert the eyelid, the scarring of conjunctiva will cause shortening of the eyelid from posterior part and this will lead to lid margin to turn toward the eye and the lashes will rub against the cornea,
- If not treated will lead to **corneal laceration** and **corneal opacification** this will compromise the vision.
- Usually patient develop entropion many years later (Ex. patient had the infection 40 years ago).
- They usually present with **entropion, corneal scarring, or dryness**
- Trachoma caused by chlamydia trachomatis which is an intracellular bacterium that cannot be stained with a gram stain because it doesn't have a cell wall, and It is treated with tetracycline, azithromycin, or clarithromycin. However the sequelae of trachoma like entropion, corneal scarring need to be treated with Surgical intervention. (**Further explanation later**)



Left: upper eyelid entropion  
Right: lower eyelid entropion



Cicatricial Entropion Trachoma

# The Eyelids

## ❖ Trichiasis:

- ◇ Eyelashes incorrectly grow toward the cornea.
- ◇ Just eyelashes for e.g. 1 or 2. Unlike entropion is the eyelid



Isolated eyelashes that are misdirected towards the cornea

## ❖ Ptosis (further explanation next slide)

- ◇ Drooping of the upper lid.
- ◇ Pseudoptosis
- ◇ **Classification:**
  - Neurogenic
  - Myogenic
  - Aponeurotic
  - Mechanical



**Trichiasis Causes:**  
1. Secondary to old trachoma  
2. Trauma

## ◇ CLINICAL EVALUATION

- History: Age of onset, Trauma, Previous surgery and Diurnal variations.
- Exclusion of Pseudoptosis.
- Associated signs: EOM movements, Bell's phenomenon, Increased innervations, Fatigability and Jaw-winking.
- Measurements: PFH, MRD 1, MRD 2, Levator function and lid crease.

## ◇ MANAGEMENT → All surgical

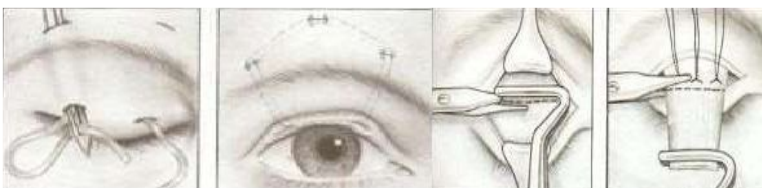
### ◇ *Type of surgery*

- Mullerectomy → Mild ptosis, good levator function.
- Levator resection → Any ptosis, reasonable levator function.
- Frontalis suspension → Severe ptosis, poor levator function.

### ◇ **Preferable age for surgical correction? Before school age**

### ◇ **Why? Children with ptosis covering the pupil need to be treated as soon as possible to prevent amblyopia.**

### ◇ Postop. Complications and patient expectation.



# The Eyelids

## ◆ Blepharoptosis:

- ◇ Blepharoptosis is drooping or inferior displacement of the upper lid. This can either happen in the upper eyelid where the eyelid is drooping and covering the cornea from superior or from lower eyelid where the eyelid is pushed up and cover the cornea from inferior
- ◇ **Classification:**
  - Congenital vs acquired:
  - Myogenic → a problem with the levator muscle.
  - Aponeurotic → a problem with the levator aponeurosis.
  - Neurogenic → a problem with the innervation of the levator muscle (3rd nerve palsy) or the muller muscle (Horner's syndrome).
  - Mechanical → a mass or swelling in the eyelid that's causing ptosis.
  - Traumatic → trauma affecting the nerve, muscle, or aponeurosis.

### Myogenic

- **Congenital** (most common cause of myogenic ptosis).
  - Dysgenesis of levator (malformation of the levator muscle).
- Acquired
  - Localized or diffuse disease.
  - Muscular dystrophy.
  - CPEO (chronic progressive external ophthalmoplegia).
  - **MG**
  - Oculopharyngeal dystrophy.



This child has congenital dysgenesis of the levator muscle. The levator muscle of the right eye is underdeveloped. Some children lift their chin to be able to see properly, but some children don't do that which allows the eyelid to block the pupil and this results in **amblyopia**. If the pupil is blocked by the eyelid, we need to do surgery as soon as possible to prevent **amblyopia**.

For Acquired during adulthood we need to do The surgery for improving the visual field However, the patient will not have amblyopia

### Aponeurotic

(Elongation of the tendon)

- Most common form of ptosis, due to stretching and elongating the tendon
  - Most common cause is aging.
  - It is commonly seen in contact lens wearers because they tend to stretch their eyelids strongly when applying the contact lens.
  - High lid crease with normal levator function.



### Neurogenic

- Acquired and congenital forms.
  - Acquired:
    - 3rd nerve palsy
    - Horner syndrome (partial ptosis, due to the blockage of the Sympathetic ganglion)
    - **Myasthenia gravis**



# The Eyelids

## 4 Eyelids Infections

### ❖ **Blepharitis** doc only define what it is, and mentioned the Tx: lid hygiene and topical Abx



- ◇ Blepharitis is a chronic inflammation that involves the roots of the eyelashes,  
Usually by bacterial infection (Most common causative organism is Staph aureus)
- ◇ Anterior, posterior or mixed.
- ◇ **Symptoms:** burning, grittiness, mild photophobia, crusting and redness of lid margin, irritation, tearing due to the toxins present in the lid margin, scales and dryness.  
Patient might also develop scales and dryness.
- ◇ **Signs:** lid margin (hyperemia, telangiectasia and tiny abscesses)  
scales and lashes (greasy and stuck together).
- ◇ **Complications:** Stye, Tear film instability, Hypersensitivity to staph. toxins, trichiasis, madarosis and poliosis.
- ◇ **Treatment:** The main goal of treatment is not to eradicate the disease, but it is to control the symptoms.  
you give viscous material because the aqueous part is not affected.
  - **Lid hygiene**
  - **Antibiotic ointment**
  - Systemic tetracycline (contraindicated in patients using roaccutane)
  - Lubricants to the gelly part (lipid dependent part) → give lipid-layer substitutes (microsomal sprays)
  - Weak topical steroid as a short term if there is inflammation (NSAIDs and steroids)

### ❖ **Sty (external hordeolum)**

- ◇ Sty is a localized Acute staph. infection and inflammation of root hair follicles around the eyelashes (**anterior** to the glands) develops rapidly, producing an elevated, painful, red, swollen area on the eyelid.
- ◇ **symptoms:** Patients will present with redness, swelling of the eyelid, and sometimes pus can be seen.
- ◇ **Signs:** Mild preseptal cellulitis.
- ◇ **Treatment:** Hot compresses, Epilation, Topical antibiotics and even systemic if associated with preseptal cellulitis and applying a warm compress.
- ◇ **How is Sty different from blepharitis?**
  - Blepharitis is a chronic infection along the route of the eyelashes, involving the whole eyelid.
  - Sty is an acute & localized infection



# The Eyelids

## ❖ Acute Chalazion (Internal Hordeolum)

Same as sty in the symptoms and Tx, but sty is anterior to the gland, when affecting the hair follicles? Sty, when affecting the meibomian gland? Chalazion, management for both, topical abx+warm compression, if not resolving? surgery

- ◇ Acute staph. infection of meibomian gland.
- ◇ **Signs:** tender inflamed swelling within the tarsal plate. It may discharge anteriorly through the skin or posteriorly through the conjunctiva.
- ◇ **Symptoms:** foreign body sensation, pain and tenderness over a specific area, swollen iris (tenderness = acute or subacute chalazion)
- ◇ **Treatment:** Control of infection
  - topical abx + steroids → 50-60% will improve in one week → if not improved (or if not started early) the inflammatory part will improve but the meibomian secretions will stay → become a **chronic** chalazion (residual)
  - curettage if residual mass (evacuation) → if you evacuate early there should not be any residual in 1-2 weeks.

## ❖ Chronic Chalazion (meibomian cyst) **Not mentioned**

- ◇ Chronic lipogranulomatous inflammation caused by obstruction of the gland orifice leading to **painless mass**.
- ◇ Most common lid mass.
- ◇ **Risk factor:** roaccutane use
- ◇ **Symptoms:** swelling
- ◇ **Signs**
- ◇ **D.D. of recurrent chalazion:** **sebaceous gland carcinoma** (mostly in 30-40 year olds, in carcinoma the lid margin is destroyed and the hair follicles are affected) → when you suspect malignancy, after evacuation send to histopathology
- ◇ **Treatment:**
  - Surgery: done if there is residual, do a vertical incision.
  - intracyst long acting Steroid injection: 2-3 sessions, not for dark skinned.



## ❖ Viral Infection

- ◇ **Herpes simplex:**
  - Primary herpes simplex, usually affects children, crops of small vesicles with mild edema and may be associated with viral keratoconjunctivitis.
  - **Treatment with acyclovir (very responsive to topical treatment)**

## ❖ Herpes Zoster Ophthalmicus

- ◇ Almost always a **unilateral condition**
- ◇ Herpes Zoster Ophthalmicus (more dangerous, less common)
- ◇ Usually affect **elderly people** without any comorbidities, however, if it occurs in young individuals you need to think about predisposing factors such as immunodeficiency.
- ◇ Vesicles, pustules and crusting ulceration over the trigeminal nerve distribution.
  - It involves the ophthalmic division of trigeminal nerve.
- ◇ If the tip of the nose is affected, suspect orbital infection.
- ◇ **Hutchinson sign**
- ◇ **Treatment:** systemic and topical acyclovir and specific tests to rule out immunocompromisation





# The Eyelids

## ❖ Chlamydial conjunctivitis (Adult Chlamydial Keratoconjunctivitis) Not mentioned

- ◇ Sexually transmitted disease (50% associated with genital infection)
  - caused by serotypes D to K.
- ◇ Subacute onset, unilateral or bilateral mucopurulent discharge.
- ◇ Follicular conj. Reaction and corneal involvement is uncommon.
- ◇ Non-tender lymphadenopathy.
- ◇ **Treatment:** Topical tetracycline, Systemic tetracycline, deoxycycline or recently azithromycin.

## ❖ Trachoma Not mentioned

- ◇ Infection caused by Chlamydia trachomatis (serotypes A, B, Ba & C).
- ◇ Obligate intracellular bacteria.
- ◇ The common fly is a major vector in the transmission of the disease.
- ◇ **It is the leading cause of preventable blindness all over the world, endemic in Japan (now eradicated), Palastine, and Egypt.**
- ◇ **Symptoms:** During childhood with redness, and mucopurulent discharge.
- ◇ **Signs:**
  - follicular conjunctivitis: **follicles<sup>1</sup> seen at the peripheral conjunctiva .**
  - Limbal follicles.
  - Keratitis.
- ◇ **Lab. Investigations:**
  - Direct monoclonal fluorescent antibody microscopy
  - ELISA
  - Polymerase chain reaction (PCR)
  - Giemsa stain (inclusion bodies)
- ◇ **Complications:**
  - Progressive conjunctival scaring (Arlt line, PTDs and secondary entropion).
  - Herbert pits.
  - Corneal pannus.
- ◇ **WHO grading:**
  - TF = trachomatous follicles.
  - TI = trachomatous inflammation.
  - TS = trachomatous scar.
  - TT = trachomatous trichiasis.
  - CO = corneal opacity.
- ◇ **Treatment:**
  - At the time of infection → tetracycline or azithromycin
  - Treatment of sequelae → (which is what we see now in KSA, we call it adult chlamydia trachomata), associated with STDs, so also treat partner.

## 5 Eyelids Lesions

### ❖ Xanthelasma

- ◇ Lipid deposits in the eyelid.
- ◇ We treat the hyperlipidemia along with treating the eyelid lesions.
- ◇ Investigating the lipid profile is very important because 50% will have lipid profile abnormality.



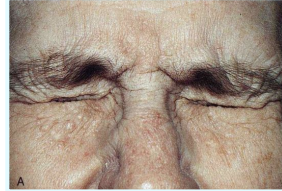
<sup>1</sup>: causes of follicles: adenovirus (most common), medication allergies, and trochoma.

# Eyelids Lesions

## 6 Abnormal Eyelids Movements

### ❖ **Blepharospasm** (both eyes are affected)

- ◇ Involuntary tonic, spasmodic contraction of orbicularis. All of a sudden can not open
- ◇ Dermatochalasis.
- ◇ Rubbing.
- ◇ Brow ptosis.
- ◇ Frontalis spasm.
- ◇ Blepharoptosis.
- ◇ Levator dehiscence.
- ◇ Ectropion/entropion.
- ◇ Dry eye (we need to rule out local causes of irritation such as; dry eyes, foreign body, or eyelid malposition).
- ◇ Idiopathic cause, treatment is yet to be recognised.



This patient has spasmodic contraction of the orbicularis and he has no control over it

### ❖ **Hemifacial Spasm** (one eye is affected)

- ◇ Intermittent and involuntary contractions of the entire unilateral side of face. (twitching of both eyelids of that eye + face)
- ◇ Present during sleep.
- ◇ **Compression of 7th nerve at the level of the brain stem.** (if both eyes are affected → idiopathic).
- ◇ Spasm in the face can be a sequelae of a healing facial nerve palsy.
- ◇ MRI evaluation.

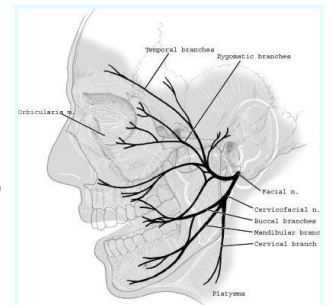
### ❖ **7th nerve palsy**

- ◇ Lower motor neuron lesion.
- ◇ The most common cause for facial nerve palsy is Bell's palsy.
- ◇ **Manifestations:**
  - **Lagophthalmos** (cannot close eyes) due to loss of orbicularis muscle → **exposure keratopathy and corneal ulceration.**
  - Tearing. Failure of pumping the tear from eye to the lacrimal drainage because of compromised orbicularis muscle .
  - Eyelid Ectropion.
  - Brow ptosis.

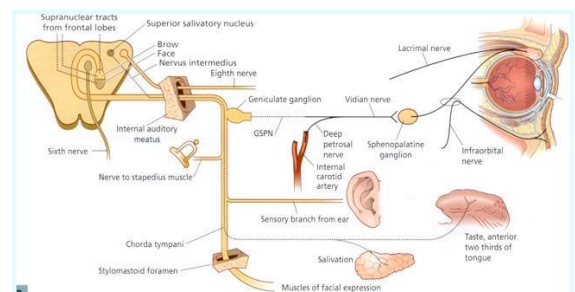
- ◇ **Location of lesion:**
  - Supranuclear, brain stem, peripheral.

- ◇ **Cause of paralysis:**
  - Bell's, infection, infarct (as of the middle ear), demyelination, neoplasm, trauma or miscellaneous.

- ◇ **Treatment:**
  - With lubricating drops or ointment and
  - Ask the patient tape their eyes when they go to sleep.



Lagophthalmos



# Botox in Ophthalmology

## ❖ Botulinum toxin:

- ◇ Clostridium botulinum **anaerobic bacteria**
- ◇ Neurotoxin types A,B,C1,D,E,F,G
- ◇ **Botox = Botulinum Toxin A**
- ◇ Blocks the cholinergic **nerve terminals**, thereby decreasing release of acetylcholine at neuromuscular junction
- ◇ Onset 3 days
- ◇ Peak effect 1-2 weeks, Duration 6-12 weeks

## Uses

### Blepharospasm



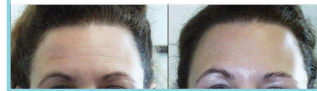
Inject the orbicularis

### Strabismus



Temporary to align the muscles  
Inject the same muscle the eye is deviating to it

### Glabellar Botox



Cosmetic use

### Botox for Crow's-Feet



Cosmetic use

# EXTRA

Pre orbital cellulitis	Orbital cellulitis	Allergic eyelid swelling
<b>PROGRESSION</b>		
1-2 days	1-2 days	Sudden
<b>PRESENTATION</b>		
Hotness Tenderness Redness + Normal vision Normal pupil reaction Normal globe	Hotness Tenderness Redness + Decrease vision Afferent pupillary defect proptosis	Itching Swelling
<b>MANAGEMENT</b>		
Need proper treatment, to not progress to orbital cellulitis through the lamina papyracea  Warm compression >7 years : oral Abx OPD Not improving? Admit + IV Abx  <7 years or febrile : Admit + IV Abx	Admision IV Abx Blood cultures Surgery in case of Subperiosteal abscess  Referral to ENT&infection disease	Anti-histamine Cold compressor No improvement? Give steroid
<b>Complications</b>		
Orbital cellulitis	Meningitis Encephalitis Cavernous sinus thrombosis	

# Lacrimal gland fossa lesions

Skipped by Dr

Disease	Duration	Presence of pain	Ultrasound reflectivity	CT	Management
Orbital pseudotumor	Days to chronic	Yes	Low	Localized or diffuse, molds to bone and globe	Systemic steroids, XRT
Lymphoma	Months	No	Low	Homogenous, oblong, molds to globe/bone	XRT, CTX (systemic disease)
Pleomorphic adenoma (benign mixed tumor)	Often > 1 year	No	Medium to high, regular internal structure	Well circumscribed, globular, possible bony expansion or excavation	Complete excision with capsule without biopsy
Adenoid cystic carcinoma, malignant epithelial tumors	< 1 year	Yes (perineural invasion)	Medium to high, irregular internal structure	Round to oval mass with bony erosion	Incisional biopsy, await permanent sections; exenteration

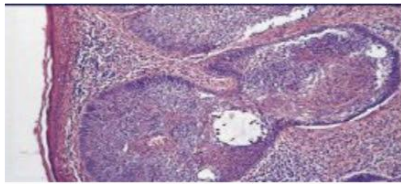
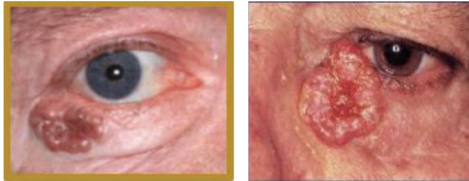
# Lacrimal gland fossa lesions

Slide Skipped by Dr

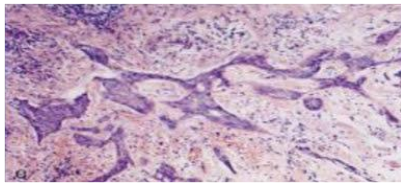
## Eyelids Tumors

### Basal Cell Carcinoma

- 90-95% of malignant eyelid.
- Tumors Lower lid and medial canthal areas.
- Nodular and morpheaform types.
- Medial canthal lesions can be problematic.
- 3% mortality



Nodular



Morpheaform

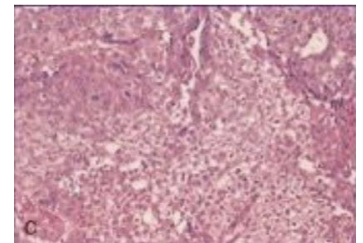
### Squamous cell

- 40 times less common than BCC.
- More aggressive, associated with perineural invasion.
- Most arise from pre-existing lesions.
- Variable presentations.



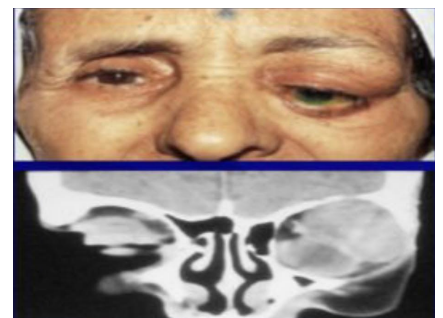
### Sebaceous Adenocarcinoma

- Highly malignant.
- 2x more common in the upper lid.
- Multicentric.
- Separate upper and lower lid lesions in 6-8%.
- Pagetoid spread.



## ❖ Lacrimal gland masses

- ◇ Inflammatory:
  - Sarcoidosis.
  - Orbital Pseudotumor.
  - Vasculitis.
- ◇ Non-inflammatory:
  - Lymphoproliferative.
  - Epithelial neoplasms.



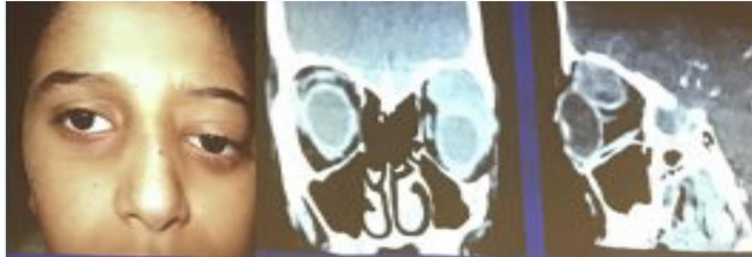
Pleomorphic adenoma

# Cases From Doctor



## CASE1:

A 9 y/o child brought to ER with history of recent unilateral proptosis, when the ER on call asked the family about hx of trauma, they said we don't know we just noticed the eye bulging, however when the doctor asked the child he said yes i had trauma in my left eye.



- ❖ **CT:**
  - Shows mass in the left eye
- ❖ **Dx:**
  - Rhabdomyosarcoma
- Any recent unilateral proptosis in a child is tumor until proven otherwise



## CASE2:

11 y/o boy presented with pain and redness in the right eye for 3 days duration.



- ❖ **On examination:**
  - The right eye is deviated and pushed, some swelling
- ❖ **CT:**
  - Subperiosteal abscess + ethmoidal sinusitis (normally the sinus is black but here the right one is opacified)
- ❖ **Dx:**
  - Orbital cellulitis, it's not preseptal because there's ptosis
- ❖ **Rx:**
  - IV antibiotics admission, consult ENT and ID group. If no improvement with antibiotics → do surgical drainage

# Conclusion

## From the doctor slides

- ❖ Knowing the anatomy helps to understand different pathological processes.
- ❖ Early diagnosis and proper management of orbital cellulitis save the patient's vision and life.
- ❖ Thyroid eye disease is an autoimmune disease and it is considered the most common cause of proptosis.
- ❖ Unilateral recent proptosis in a child should be taken seriously.
- ❖ Congenital nasolacrimal obstruction commonly caused by membranous obstruction and typically presents with tearing and discharge since birth.
- ❖ Chalazion is a common condition and it results from blockage of Meibomian gland and presents as discrete swelling of the eyelid.
- ❖ Severe congenital ptosis needs to be corrected as early as possible to prevent amblyopia.
- ❖ Proper treatment of exposure keratopathy in patients with facial palsy is crucial to prevent corneal ulcer and scarring.

## SAQs/OSCE

**Q1: Which one of these walls is the thickest/strongest bone ?**

- The lateral wall; because the eyes are in most danger from the lateral side.

**Q2: Which wall is the thinnest?**

- The medial wall.

**Q3: Which bone is the thinnest ?**

- Ethmoid bone (0.3 mm) that is why it is easy to get fractures in facial trauma, and it is also easy for infections in the sinus to go to the orbit.

**Q4: What other name is there for the ethmoid bone?**

- Lamina papyracea (paperlike), because it is the weakest/thinnest bone.



# Lecture Quiz

**Q1- Trauma patient present to the ER with eye pain, orbital swelling, what is most likely diagnosis?**

- A. Infection
- B. orbital emphysema
- C. orbital cellulitis
- D. Lymphangioma

**Q2-: Most common cause of orbital cellulitis is?**

- A. Sinusitis
- B. External otitis media
- C. meningitis
- D. Rhinitis

**Q3-: what is the first line treatment for Capillary hemangioma?**

- A. Surgery
- B. Steroid
- C. Alpha blockers
- D. Beta blockers

**Q4-: A child present with unilateral proptosis that the family noticed progressing so fast, what is most likely the diagnosis?**

- A. Rhabdomyosarcoma
- B. Retinoblastoma
- C. Capillary hemangioma
- D. Lymphoma

**Q5-: Child with bilateral ptosis since birth. He had no lid creases. no visual field defect. Extraocular muscle activity was normal. Which of the following is the cause of his ptosis?**

- A. Neurogenic
- B. Aponeurotic
- C. Myogenic
- D. Neuromuscular

## Short Answer Questions

### Case 1

A 4 months old baby, the family noticed something started on his eye at age of 2 months and decreasing?



A: Name the condition shown in pictures above?

B: What is the 1st line treatment?

C: Name 1 complication can happen if this condition left untreated?

### Case 1

A 6 months old baby presented with tearing and eye discharge?



A: What is the diagnosis?

B: Identify the possible site of obstruction?

C: Mention 2 management options?

Answers:

Case 1

A: Capillary hemangioma

B: Propranolol (beta blocker)

C: Amblyopia

Case 2

A: Congenital lacrimal duct obstruction

B: Valve of Hasner

C: 1. Massage (before 1 year) 2. Probe (after 1 year)

**This work was originally done by 438 and 439 Ophthalmology Team**

**Edited by 441 Ophthalmology Team**

**Team leaders:**

**Abdullah Aldayel**

**Ibrahim Aljurayyan**

**Sultan Alosaimi**

**Members:**

**Sultan Alosaimi**

**Note Takers:**

**Abdullah Alqarni & Sultan Alosaimi**

