Oculoplastics overview

Dr Ekta Aggarwal
Case Scenario Links

Oculoplastics overview

• Child with red swelling around one eye (Oph10)
• Diplopia (Oph06)
• Gradual deterioration in visual acuity over time (Oph07)
• Watery eye in an infant (Oph03)
• Skin tumours (Derm03)
EYELIDS
Functions of Eyelids:

- Light protection & regulation
- Keep cornea moist
- Driving lacrimal pump
- Mechanical protection of globe
EYELIDS (surface anatomy)

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

Lower Lid [LL] margin JUST touches inferior limbus
Distance between UL margin & central pupillary reflex is margin reflex distance (MRD₁) and normally, is 3.5 mm.
Space between UL & LL is palpebral fissure height (PFH) and normally, it is 10-12 mm.
EYELIDS (surface anatomy)

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

Normal parameters for lid position evaluation:

- $\text{MRD}_1$ - 3.5 – 4.0 mm
- PFH – 10 -11mm
- LPA – <4mm – poor
  - 5-7mm – fair
  - > 7-8mm – good
- Lid crease height – 10 mm in females
  - 8-10 mm in males
- Inferior scleral show – Nil
- Lagophthalmos (inability to close eyes) – Nil
- Bell’s phenomenon (globe movement on eye closure) – Up and out
Eyelid muscular and nervous control

**Eyelid Retractors:**
- *Levator Aponeurosis* (3rd CN. *Parasymp*)
- Muller’s muscle (*Sym*)

**Eyelid Protractor:**
- Orbicularis Oculi (*VII N*)
EYELIDS (internal anatomy)

(Anterior lamellae)
- Skin
- Orbicularis Oculi

(Posterior lamellae)
- Tarsus (meibomian glands)
- Conjunctiva

Orbital Septum
Orbital fat
Muller’s muscle
Superioris (Aponeurosis)
Outward direction of lashes
EYELID POSITION ANOMALIES
along horizontal axis

PTOSIS
(droopy eyelid)
Congenital Ptosis

**FEATURES:**
- Fair to Poor LPS action
- Faint/ Absent lid crease
- Lid lag on down gaze

If chin elevation & frontalis overaction (s/o visual axis obstruction by ptotic lid), It needs urgent intervention, or else amblyopia develops.
Acquired Ptosis

**FEATURES:**
- Good LPS action
- High lid crease
- No lid lag on down gaze
Acquired Ptosis

Causes:
- Involutional
- Mechanical
- Myogenic
- Traumatic
- Neurogenic

Not all acquired cases have classical features of acquired ptosis
Acquired Ptosis

Involutional (Aponeurotic)
- the most common type of ptosis

Frontalis overaction (s/o visual axis obstruction by ptotic lid); but surgery depends upon patient’s comfort level. No risk of amblyopia after the age of 8-10 yrs.
Acquired Ptosis

Myogenic:

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

Ptosis is one component of these syndromes
Acquired Ptosis

**Neurogenic:**
- Third Cranial nerve palsy

**Note:**
- Total ptosis
- Exotropia
- Hypotropia
- Mydriasis
Acquired Ptosis

Neurogenic:
- Horner’s syndrome

Note:
- subtle ptosis
- miosis

sympathetic innervation to Muller’s affected
sympathetic innervation to Pupil (dilators) affected
Acquired Ptosis

Mechanical:
- UL tumors as Hemangioma
- Lid edema as post-trauma/ surgery
- Dermatochalasis
  (aging skin hanging over UL margin)
Acquired Ptosis

**Trauma:**
- Blunt or penetrating
- Long term contact lens wear
- Iatrogenic

Causes of mechanical/traumatic ptosis may overlap
EYELID POSITION ANOMALIES along horizontal axis

Lid Retraction
Lid Retraction

Causes:

- Congenital
- Acquired
  - Thyroid Eye Disease
  - Midbrain lesions
  - Parinaud’s syndrome
EYELID POSITION ANOMALIES along vertical axis

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

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
ECTROPIA

Causes:

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

Lower eyelid edema causing mechanical ectropion
EYELID POSITION ANOMALIES along vertical axis

Entropion
(eyelid margin rolled in)
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
  - Ocular Cicatricial Pemphigoid
  - Stevens Johnson syndrome
  - Trachoma (developing countries)
  - Chemical injury

Contraction and thus, shortening of posterior lamella of the eyelid: which pulls and rolls in the eyelid margin along with eyelashes.
General overview of Orbital bones
Frontal, Sphenoid
Zygomatic, Sphenoid
Zygomatic, Maxilla, Palatine
Maxilla, Lacrimal, Ethmoid, Sphenoid
• Optic Nerve
• Ophthalmic A
• Sympathetic N plexus
Annulus of Zinn
Orbital septum is a white 360° tough barrier between orbit and lid tissues, stretching from distal tarsus border to orbital rim.

Important to differentiate, if inflammation/infection is limited in front of OS extends behind the orbital septum.
Skull Sinuses & Orbit

- Frontal Sinus
- Ethmoid Sinus
- Maxillary Sinus
Skull Sinuses & Orbit

Function of sinuses:

- Decrease weight of skull.
- Increase resonance of voice.
- Humidify and heat the inhaled air
Orbit examination

- Visual acuity
- Pupils – miosis, mydriasis, RAPD
- Visual field
- Extra-ocular movements
- Exophthalmometer – axial/non-axial, look from above/below
- Palpate orbit for masses
- Lids – retraction, masses, scleral show
- Optic nerve
Common Orbital disorders
Pre-septal cellulitis

Etiology: Trauma, Insect bite, Stye

Features:
- Inflamed, oedematous lids
- Nil/ mild pain on eye movements
- Visual acuity good
- Intact Optic Nerve function
Orbital Cellulitis

Aetiology:
Sinusitis (commoner in children)
Trauma/ Tumor in adjoining sinuses

Features:
- Proptosis
- Inflamed pre-septal tissues
- Painful/ limited eye movements
- Drop in Visual acuity
- Compromised Optic Nerve function
Thyroid Eye Disease

- Lid changes as lid lag, lid retraction, lagophthalmos
- Ocular surface Inflammation esp. over horizontal recti muscles
- Proptosis
- Myopathy [strabismus]
- Optic Neuropathy
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
Common Eyelid Lesions
Benign Eyelid Lesions

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

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

- **Stye**

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

*Keep a close watch, as in severe cases, stye may worsen to orbital cellulitis*
Benign Eyelid Lesions

- **Chalazion**

**Treatment:**
- Warm compresses/ antibiotic ointment, if recent onset
- Incision & Curettage in resistant cases
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 ± radiotherapy depending upon the depth of involvement
Lacrimal Drainage System
Lacrimal gland produce tears (aqueous part)
Lacrimal gland
produce tears (aqueous part)
Common Lacrimal Disorders
Congenital Naso-lacrimal Duct Obstruction

- Symptoms start soon after birth
  - Watering ± discharge
  - Fluorescein dye disappearance delayed
Congenital Naso-lacrimal Duct Obstruction

- Treatment Options in order of preference:
  a) Conservative [Lacrimal Massage ± Antibiotics]
  b) Probing & Syringing
  c) Intubation/ Balloon Dacryoplasty
  d) Dacryocystorhinostomy

Nearly 95% resolve conservatively by the end of one year of age
Acquired Naso-lacrimal Duct Obstruction

- Commoner in females > 40 years of age
- Delayed Fluorescein dye disappearance test
- Syringing:
  - Complete/ partial regurgitation of fluid

Treatment:
- Dacryocystorhinostomy [external/ endoscopic]
  ± silicon intubation
The End

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