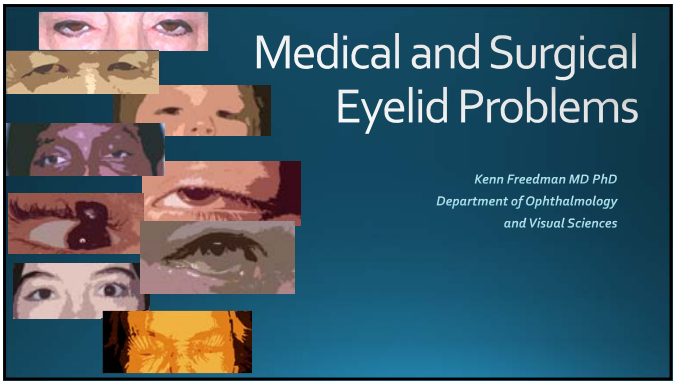

Medical and Surgical Eyelid Problems

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Disclaimers

- I developed the course material and information independently.
- No relevant financial relationship exists by anyone in control of the content.

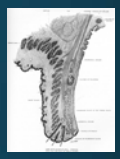
Outline

1. Eyelid Anatomy and Changes with age
2. Eyelid Inflammation, Styes
3. Common Lesions – Benign and Malignant
4. Management Options, Biopsy types
5. Eyelid Malpositions
6. Ptosis and Dermatochalasis, Brow Ptosis
7. Ectropion, Entropion
8. Lagophthalmos and 7th CN palsy
9. Tarsorrhaphy indications
10. Blepharospasm
11. DDX Slides

Eyelid Anatomy

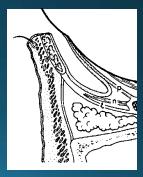
- Lid Crease
- Fornices
- Fissures
- Tarsus

Upper Lid



- 2 lamellae – anterior (skin and orbicularis)
  posterior (tarsus and conjunctiva)

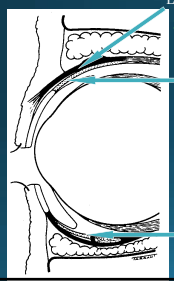
Lower Lid



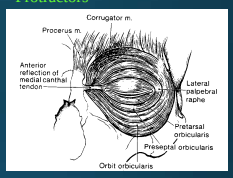
- Muscles – Retractors and Protractors
- Tendons – Lateral and Medial Canthal

Eyelid Muscles

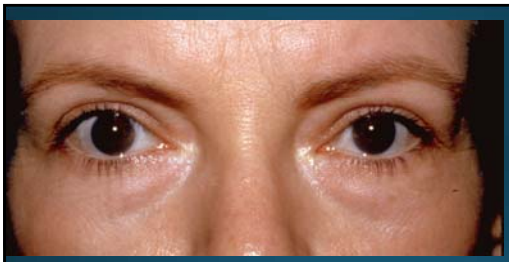
Retractors:



Protractors



Cranial Nerve VII function



Things to Note

Lid Apposition to Globe

Position of Lid Margins

MRD = 3-5 mm

Canthal Insertions

Brow Positions

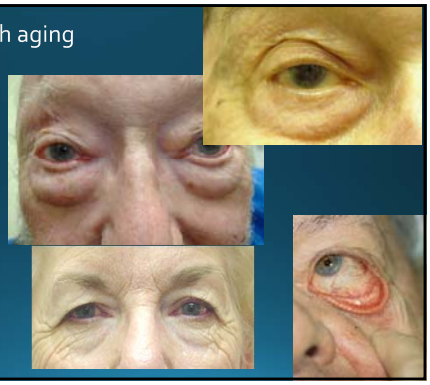
Changes with aging

Dermatochalasis
Lateral Hooding , Festoons

Bulging UL (nasal)
and LL fat pads

LL laxity with ectropion

Ptosis (Brow Elevation)
or Brow Ptosis



Ptosis

Usually age related levator dehiscence, but sometimes a sign of neurologic, mechanical orbital or inflammatory disease

Dermatochalasis

age or hereditary or
Brow and Forehead Ptosis
– rarely a sign of anything else

Blepharospasm

Sign of ***External Irritation*** or
Neurologic Disease

Eyelid Edema with Inflammatory Signs

Fullness. Loss of lid crease,
Erythema, ptosis

What should you think of?

Differential Diagnosis (DDx)

Eyelid Edema

Inflammatory Appearance (red, warm, etc.)

First Consider Underlying Orbital Disease
- **Orbital Cellulitis, Pseudotumor, Wegener's**
- **Graves Ophthalmopathy, Orbital Varix**
- **Orbital Tumors that can mimic inflammatory process: Lacrimal Gland CA, Lymphoma, Lymphangioma, etc.**
- **Lacrimal Gland – Dacryoadenitis or tumor**
- **Sinus Mucocele**

Preseptal Cellulitis
- – also think of early -HSV, HZO, or erysipelas (rapid strep),
- Periorbital necrotizing fascitis (β-hemolytic strep, staph A., pseudomonas)

Dacryocystitis / Dacryocystocele
Blepharitis
Contact Dermatitis – e.g. Neomycin, Gentamicin contact sensitivity
Urticaria / Angioedema
Conjunctivitis with contiguous lid edema
Insect Bite
Lid Tumors: Hordeolum / Chalazion, CA, ***Cutaneous Lymphoma***
Melkersson-Rosenthal Syndrome – (Granulomatous inflammation)

Without Inflammatory Appearance, consider above but also…

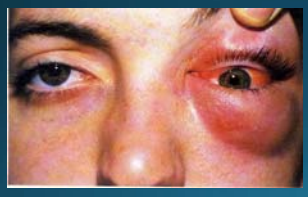
Allergic Eyelid Edema
Hormonal Shifts
Systemic Disorder – Cardiac, Renal, Hepatic, Thyroid with edema
Graves Ophthalmopathy – can just have lid edema w/o inflammatory appearance
Lymphedema after trauma, surgery to lids or orbit (e.g. lymphatics in lateral canthus)
Traumatic Leak of CSF into upper eyelid (JAMA Oph 2014;312:1485)
Blepharochalasis

Not True Edema, but might mimic it:
Dermatochalasis, Hidden Eyelid or Sub-Conjunctival Mass, Prolapsed Orbital Fat

Orbital Signs

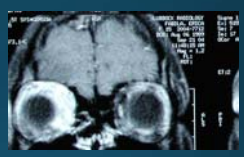
When eyelid edema might be the tip of iceberg

When your concerned about:
- **Orbital Cellulitis**
- **Orbital Pseudotumor**
- **Orbital Malignancy**
- **Vascular – e.g. CC fistula**



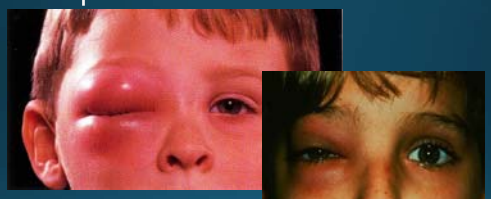
Proptosis
Chemosis
Poor Motility
Poor Vision
Pupil abnormality
– e.g. RAPD

Case of Chronic Eyelid Swelling/Erythema



Orbital Pseudotumor

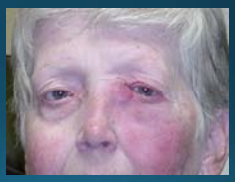
Pre-Septal Cellulitis



Good Vision
Good Motility
No Chemosis
PERRL w/o RAPD

Lacrimal Dacryocele

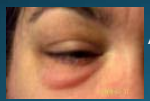
Dacryocystitis



Some more relatively benign conditions

Conjunctivitis

Hordeola



Allergic

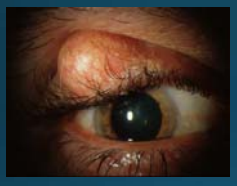
Molluscum

"Styes"

Hordeolum, Chalazia and Pyogenic Granuloma

- Often in association with Blepharitis and Obstruction of Sebaceous glands
- Hordeolum – Acute / infectious (e.g. staph.) → cellulitis
- Chalazion – Chronic / → Lipogranulomatous inflammation
- Pyogenic Granuloma → granulation tissue response

Chalazia and Hordeola



Sign of underlying meibomian gland/ sebaceous gland dysfunction / Blepharitis

Hordeolum

Acute Inflammation of glands:

Meibomian – *Internal*

Hair Follicles, Zeis or Moll Glands - *External*

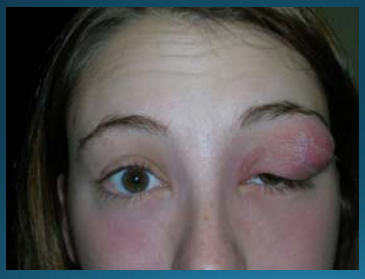
Hordeolum

"Point"

Drain through Meibomian orifice

Eyelid Abscess

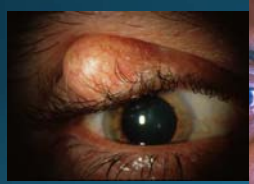
Some confusion with Hordeolum



Incision and Drainage if not resolve on medical therapy

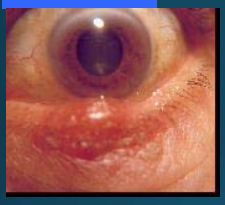
Chalazia

External



Internal

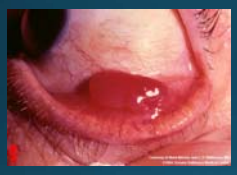
Chalazia



Right at lid margin

Sometimes mainly internal

Pyogenic Granuloma
(Lobular Capillary Hemangioma)



Reactive Hemangioma, with granulation tissue, proliferating capillaries

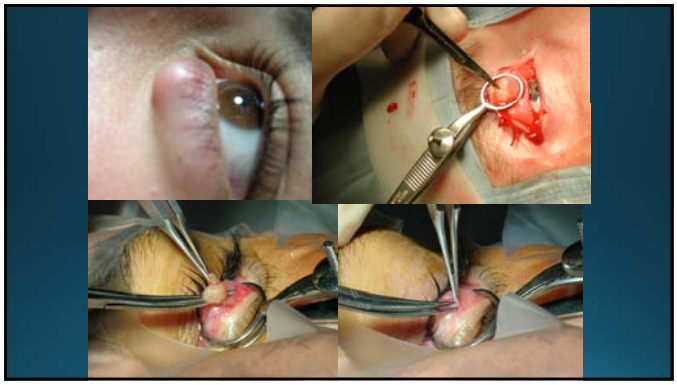
Response to trauma, irritation, surgery, suture, underlying Chalazion

RX: Topical Steroid ung, Excision, now even Timolol reportedly of help

JAMA Oph 2017; 135:383-5

Management

- Hot Compresses
- Lid Scrubs
- Topical Drops or Ointment:
  Emycin or maybe steroid (Tobradex)
- Oral Antibiotics? Doxyclycline 100mg qweek for up to 26 weeks – might be useful for ***"chalazion attacks"***.
- Intralesional Injection of Triamcinolone (OPH 2005; 112:913)
  Consider before excision in some cases
- Excision – ***(not I and D)***



Eyelid Mass / Lesions

- **Cystic Like / Fluid Filled**
  - Hydrocystoma /Sudoriferous Cysts – clear fluid
  - Sebaceous Cyst , Epithelial Inclusion Cyst – both usually have white/yellow appearance
  - Blister, Bulla, Vesicle (e.g. HSV), Pustule
- **Pedunculated**
  - Papilloma, Skin Tag, Cutaneous Horn
- **Darker / Pigmented**
  - Nevus
  - Melanoma – often irregular pigmentation and borders
  - Seborrheic Keratosis (SK) – sessile, stuck on appearance
  - Xanthelasma – yellowish – often medial canthal skin
  - Kaposi's Sarcoma
  - Some Cysts will have dark appearance clinically:
    - e.g. apocrine cyst, some inclusions cysts
- **Nodular - Commonly at Lid Margin**
  - Intradermal Nevus
  - BCCA
  - Hair Follicle Tumor

Recall signs of Malignancies
1) lash loss
2) ulceration, bleeding
3) telangiectasias
4) irregular pigmentation
5) distortion or destruction of eyelid anatomy

Vascular
- Hemangioma
- Cherry Angioma – Bright red
- Varix
- Other: Kaposi's Sarcoma, Pyogenic Granuloma

Crater / Ulcerated
- Carcinomas (BCCA, SCCA, etc)
- Keratoacanthoma
- Molluscum Contagiosum

***Don't Forget**: Chalazion, Hordeolum and their Mimics (e.g. Sebaceous Cell CA)*

Lid Tumors

(Lecture on Lid lesions and resection)

Need to think about possible orbital involvement

Common Benign Eyelid Lesions

- Chalazion and related lesions
- Epithelial Inclusion Cyst
- Nevus
- Papilloma
- Seborrheric Keratosis
- Apocrine Hidrocystoma
- Hemangioma
- Xanthalesma
- Cutaneous Horn

** Usually:
Do not destroy normal architecture of eyelid
Do not bleed, no lash loss

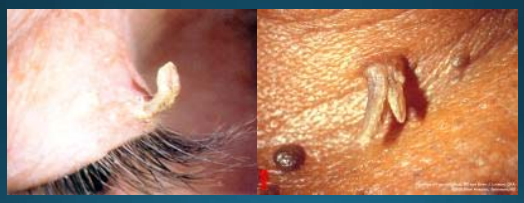
Papilloma

Can be pigmented, can mistake them for nevi or worse

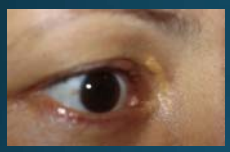
Seborrheic Keratosis (SK)

Can be pigmented, can mistake them for nevi or worse

Cutaneous Horn



Xanthelasma

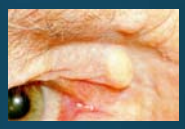


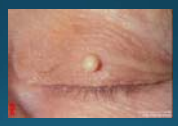
What is it?

Capillary Hemangioma

Adult with small hemangioma

Cysts

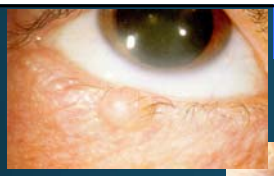


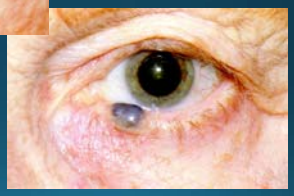


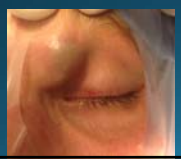
Sebaceous Cyst or

Epidermal inclusion cyst

Hidrocystoma





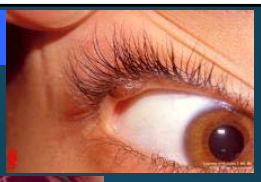


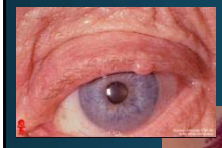
Some can have bluish / blackish color

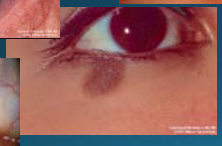
(Apocrine hidrocystoma)

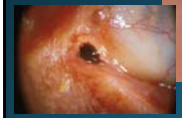
Nevi

can be pigmented or non-pigmented







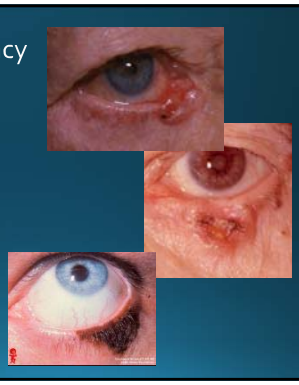


- Congenital or Acquired
- *Acquired often between 5-10 years old*
- *Can be biopsied if changes noted*

Eyelid Malignancies

Signs of possible malignancy *(External)*

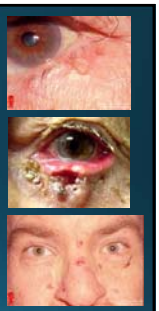
- Loss of lashes - *Madarosis*
- Ulceration
- Bleeding
- Telangiectatic Vessels
- Chronic Inflammatory signs
- Distortion on Anatomy
- Pigmentary Changes



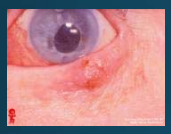
Basal Cell Carcinoma

- Most common eyelid malignancy
- Lower Lid margin > Upper lid
- Nodular, Pearly
- Invasive, Infiltrating Morpheaform
- Gorlin's Syndrome
- Basal cell – nevus syndrome

Local Invasion
No Metastatic Potential



Squamous Cell Carcinoma



More biologically aggressive

Can arise from areas of solar damage or actinic keratosis

Potential for metastasis

Sebaceous Cell Carcinoma

Skin Sebaceous Glands or Meibomian glands

Highly Malignant and potentially lethal

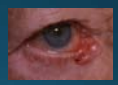
Conjunctival Pagetoid Spread

Can Masquerade as

- Blepharitis, chronic inflammation
- Blepharoconjunctivitis
- Chalazia*
- Diffuse Eyelid thickening

Suspected Malignancy Management Options

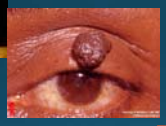
- Simple excision with permanent
  (e.g. borders seem clear → ellipse, or wedge)*
- Incisional Biopsy – to make further plans



- Frozen Section Controlled Excision
  (e.g. uncertain of clinical extent of invasion of tumor)
- Mohs micrographic

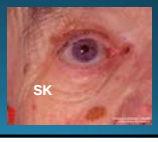
Pigmented lid lesions
Differential Diagnosis


Nevus

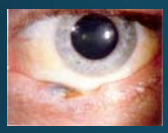

Papilloma

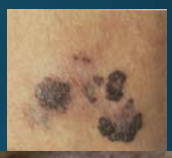

????


Yikes! (MM)


SK

Malignant Melanoma





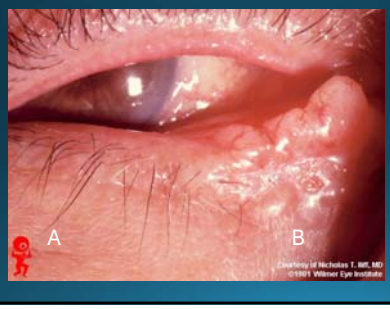
Melanoma - Summary

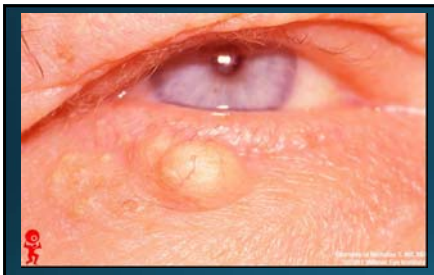
- *Recruit the help of a dermatologist**
- Realize and inform your patients that more than one procedure may be necessary.
- Incisional biopsy OK
- Don't be hesitant to "refer"**

*Regarding periodic whole body exams (since other cutaneous melanomas more likely) , Woods Light, recommendations

** *remember a good doctor knows his limitations*

What do you suspect? What would you do?



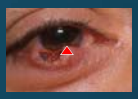


Epithelial Inclusion Cyst

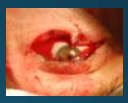
Approaches to Excision of Suspected Malignancies

- Incisional Biopsy First??
- Excisional Biopsy – e.g. Ellipse
- Wedge Resection
- Permanent Section
- Frozen Section
- MOHS

Incisional Biopsy



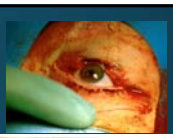
- Removal of small section of tumor*
- Pathologic confirmation, prior to committing the patient to a bigger procedure:



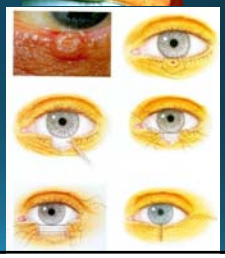
Full thickness lid – large amounts of tarsus
e.g. wedge

Excision of other vital structures
e.g. punctum, canaliculus, sac
Canthal tendons (LCT or MCT)

Wedge Resection
Excisional Biopsy



- Suspicious for Malignancy*
- Concern for invasion**
- Lid Laxity present



Sometimes can do primarily
e.g. clear BCCA with
definite borders near margin

Eyelid Malpositions

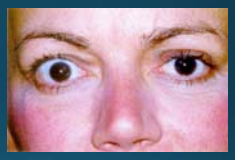
Too High or Too Low? – Lid Retraction or Ptosis
In or Out? – Entropion or Ectropion

Upper lid position

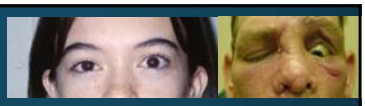
The upper eyelid margin is normally situated 1.5 mm to 2 mm below the superior limbus

and 3 mm to 5 mm above the center of the cornea.

The lower eyelid margin is normally situated at the inferior limbus



Eyelid Retraction



1. **Graves / Thyroid Eye Disease**
2. Orbital Disease
3. Cicatricial / Scarring
   Trauma, Post Surgical
4. Neurological Problem
5. Pseudo-retraction – contralateral Ptosis

Need referral for further evaluation

Surgical Correction only after etiology is known and underlying problems have been addressed

Lower Lids can be retracted too

Thyroid Eye Disease Signs

Unilateral or Bilateral Eyelid Retraction

Unilateral or Bilateral Proptosis

Lid Lag on Downgaze

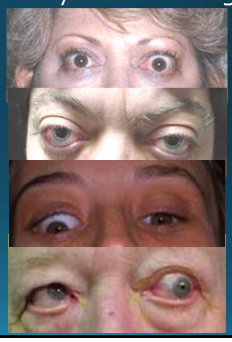
EOM duction restrictions - **IR>MR**>>SR, LR

Strabismus – Esotropia or Hypotropia

Lagophthalmos

Corneal Exposure

Chemosis, Injection



Drooping Upper Eyelids

Dermatochalasis of Upper Lids

Ptosis of Upper Lids
Blepharoptosis

Ptosis of the Brow
Brow Ptosis

Dermatochalasis

Without or With
Upper Eyelid Ptosis

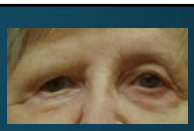
Dermatochalasis with lateral hooding and MRD 4 mm OD and 4 mm OS

Lateral Hooding

Dermatochalasis plus Ptosis

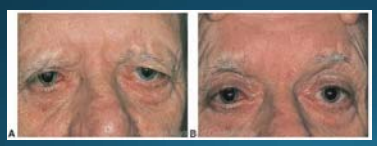
Eye Brows

- Elevators – Frontalis Muscle
- Depressors – Corrugator and Procerus Muscles



Brow normally located above superior orbital rim Brow Ptosis – measure distance from mid-brow to superior orbital rim in mm.

Brow Ptosis
DDX:
Involutional (Age)
Seventh CNP
Facial Surgery or Trauma



NOTE – how brow ptosis contributes to hooding from dermatochalasis

Real Ptosis

- "Congenital"

- Acquired
- Levator Dehiscence
- Neurological*
- Mechanical
- Orbital Disease
- Myogenic
- Inflammatory

Definitions

- Ptosis: More properly called Blepharoptosis. A lowering of the upper eyelid so as to cause a narrowing of the palpebral fissure height and a reduction of MRD (often MRD < or = 2 mm)
- Dermatochalasis: Redundancy of eyelid skin (upper or lower). This redundancy is linked to the position of the eyebrow. This is also sometimes associated with orbital fat prolapse.
- Brow Ptosis – A lowering of the eyebrow position – which can affect both the hooding of dermatochalasis and the eyelid position as well
- Blepharoplasty: Excision of redundant eyelid skin and/or orbital fat.
- Blepharoplasty ≠ Ptosis Repair

"Ptosis Evaluation"

- Do they have real eyelid ptosis?
- If –*Yes*– then need consider *DDx* for Ptosis
- Further exam to check for Dermatochalasis and Brow Position as these are important factors in the future surgical plan
- We need to consider whether the patient needs:
  - true ptosis surgery
  - blepharoplasty
  - brow lifting

Ptosis

Levator (Dehiscence)
- Aging, Trauma, Post-op (e.g. CE), Post-Inflammation, CTL wear

Congenital, Hereditary
- *Levator Mal-development* , Blepharophimosis Syndrome (BPES)

Neurological
- 3rd Nerve Palsy, Horner Syndrome

Orbital Disease
- Cellulitis, Pseudotumor , Graves or Tumor

Myogenic
- *Myasthenia Gravis*,
- CPEO
- Muscular Dystrophies
  e.g. Oculopharyngeal MD, Myotonic MD

Mechanical
- Eyelid Tumor (e.g. NF), Chalazion
- Excessive Dermatochalasis and/or Brow Ptosis

Inflammatory
- Eyelid, Orbit, Uveitis, Conjunctivitis, Keratitis (e.g. SLK)

Pseudo-Ptosis
- Enophthalmos (see list)
- Phthisis or small globe or Anophthalmos
- Blepharospasm, Dermatochalasis or Brow Ptosis Mistaken for ptosis
- Hypertropia, Hypotropia

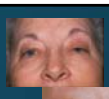
Congenital Ptosis
with diminished lid crease

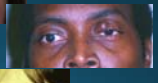
Images from emedicine

head tilt

Acquired Ptosis

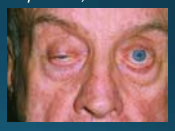
• Aponeurotic	• Levator Dehiscence Due to age, trauma, CE, injection
• Neurogenic	• Horner's, Third Nerve
• Myogenic	• Myasthenia, CPEO
• Mechanical	• Tumor, Chalazion, • Brow Ptosis
• Inflammatory	• Uveitis, Keratitis, Conjunctivitis, Cellulitis Dacryoadenitis




Levator Aponeurosis Dehiscence

- Usually age related
- Trauma, previous ocular surgery (e.g. Cataract, Phaco) or injections (e.g. sub-Tenon's steroid)
- Often worse on downgaze "have to lift eyelid up to read"
- Good Levator function
- Eyelid crease maybe high, or less evident



Aponeurotic

- Age, Senile, Involutional
  Levator dehiscence or disinsertion
- Traumatic
- Chronic Inflammation
  Herpes Zoster, Orbital Pseudotumor, Uveitis
- Chronic Lid Edema
  Graves Ophthalmopathy, Allergic, Blepharochalasis
- Post operative
  Ophthalmic Surgery, cataract extraction, Sub-Tenon's injection

Aponeurosis
Stretching
Dehiscence

Neurological

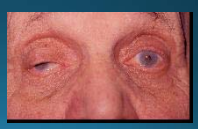
- Third Nerve Palsy/Paresis
- Horner's Syndrome
- Migraine
- Cerebrovascular Accident

(rare)

Brainstem

Unilateral or Bilateral Hemispheric or Frontal Lobe Lesions
(Apraxia of Lid Opening)

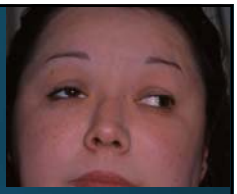
Horner's



III rd CNP

Myogenic

- Myasthenia Gravis, Ocular Myasthenia
- Mitochondrial Myopathies
- CPEO; Kearns-Sayre syndrome
- Muscular Dystrophies:
  - Oculopharyngeal MD*
  - Myotonic Dystrophy**



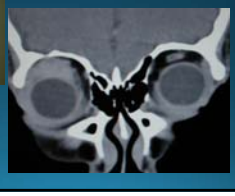
MG

Ptosis

can be a sign of orbital disease

NOTE:

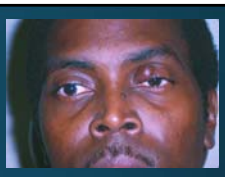
Eyebrows are elevated



MRI of Brain?

Mechanical

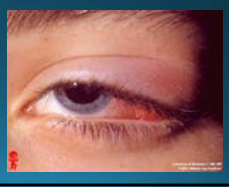
- Eyelid Tumor
- Orbital Tumor
- Scarring interfering with upper lid mobility
- Brow Ptosis
  - Seventh CNP
  - Trauma, Surgery, Age



Inflammatory

- Conjunctivitis
- Cellulitis
- Keratitis
- Uveitis
- Orbital Inflammatory process

Will resolve or get aponeurotic ptosis



Evaluation of Patients with Upper Lid Drooping

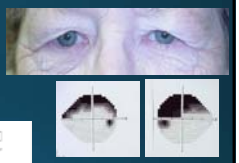
Dermatochalasis and Hooding - Touching UL lashes?
Brow Elevation or Ptosis

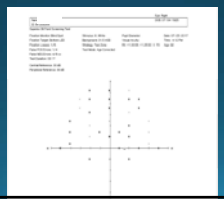
MRD – marginal reflex distance
LF - Levator Function

Pupils and Motility – R/O Horner's Syndrome, MG and Third CN Palsy

Corneal Exposure, Dryness

Visual Field Testing
30-2 or 24-2 HVF
36 Point Screening Superior Test (BLEPH VF)





Can produce significant superior and lateral visual field loss

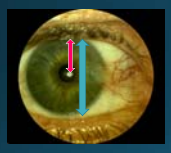
Consider Neurologic and Neuromuscular problems

Check Pupils and Motility!

Condition	Pupils	Eyelids (ptosis)	Motility Deficit
Myasthenia Gravis	-	+/-	+/-
3rd Cranial Nerve Palsy	+/-	+	+
Horner's Syndrome	+	+	-

Evaluation

MRD is the distance from the upper lid *margin* to the corneal light reflex.

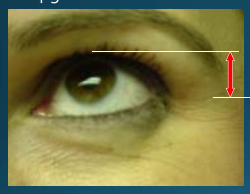


Vertical Fissure Height

Visually significant Ptosis usually with MRD of 2mm or less – depending on pupil size

Measuring Levator Function

Upgaze



Downgaze

LF = total excursion of upper lid from maximal elevation to maximal depression.

(Best to hold brow while making measurement to eliminate it's contribution)

Levator Function

	Good	Fair	Poor
Range	**> 10 mm**	**6 – 10 mm**	**<= 5 mm**
More Typical of:	**Levator Dehiscence**	**Neurologic and Myogenic**	**Levator Maldevelopment**

Taking eyebrows, dermatochalasis, MRD, LF and Corneal status in account ….

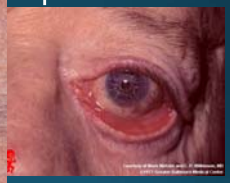
Surgical Options for Drooping Eyelids

1. Blepharoplasty
2. Brow Lifting
3. Levator Advancement
4. Levator Resection
5. Sling Procedures
6. Posterior Resection Procedures

One or more of these procedures

Entropion

Ectropion



Usually signs of lid laxity and age related changes-

But need to think about *Cicatricial processes* –

and sometimes even *orbital disease* – e.g. Orbital tumor or Graves Ophthalmopathy

Entropion

- Senile – laxity, enophthalmos, disinsertion/laxity of LL retractors, orbicular override/ spasm
- Cicatricial – posterior lamella, shortened fornix
- Orbital Disease – Graves Ophthalmopathy

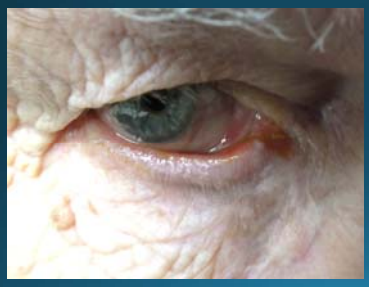
Ectropion

- Senile – Laxity, laxity of lateral canthal tendon
- Cicatricial – anterior lamellar scarring
- Orbital Tumors

Ectropion
of Lower Eyelid

- Involutional – lid laxity*
- Cicatricial
- *Combination of two above*
- Paralytic – 7th nerve
- Mechanical
- Congenital

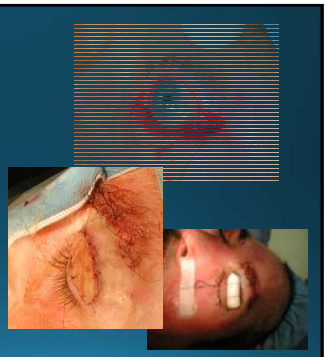
Medial Ectropion
(Eversion of Punctum)



Ectropion repair

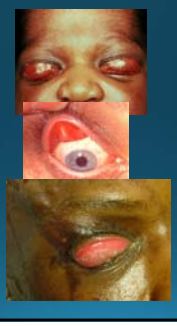
Depending on Mechanisms

- Lid Tightening
- Skin Grafting
- Plication of Lid Retractors



Upper Lid Ectropion?

- Congenital Ectropion
- Floppy Eyelid Syndrome
- Skin Retraction
  (result of chemical burn)

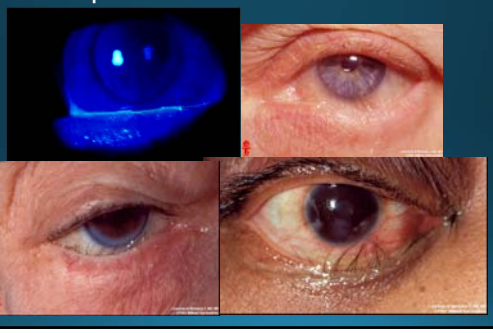


Floppy Eyelid Syndrome

Floppy Eyelid Syndrome with h/o eyelid manipulation and corneal exposure problems

Procedure: UL Lid tightening :

Entropion and Trichiasis

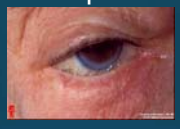


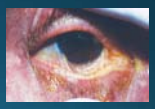
Management of Trichiasis

- *Need to first find the cause*
  (e.g. entropion, shortened fornix, distichiasis, lash misdirection)
- Epilation
- Lash Destruction
  Electrolysis, Cryo-probe, Follicle Excision and Cautery
- Wedge Resection
- Repair of Entropion

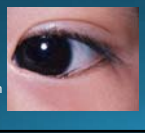
Lower Lid Entropion

- Involutional
- Cicatricial
- Congenital





Ocular Cicatricial Pemphigoid (OCP)



Epiblepharon

Involutional / Spastic Entropion

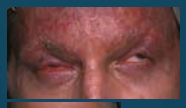
Horizontal Lid Laxity
Lower Lid Retractor Dehiscence Laxity
Orbicularis Override and Spasm

Upper Lid Entropion and Trichiasis

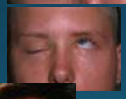
- Mechanical – excessive Dermatochalasis
- Cicatricial –
  - Trauma, Burns
  - HZO
  - Chronic Bleparo-conjunctivitis
    - e.g. Acne Rosacea
  - Trachoma
  - Stevens-Johnson Syndrome, SLE
    - (Most cases due to secondary scarring and contracture of posterior lamella)

Lagophthalmos

- Eyelid Retraction



- Seventh Nerve Palsy

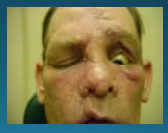


- Graves Disease

Post- op UL and LL Blepharoplasty

Lagophthalmos
(poor, incomplete eyelid closure)

- Paralytic
  - Seventh Nerve Palsy
- Mechanical
  - Graves Ophthalmopathy
- Cicatricial
  - Trauma
  - Burns
  - Surgery
    - Blepharoplasty
    - Tumor resection



Seventh Nerve Palsy

Lagophthalmos

Exposure Keratopathy

Tear Pump Dysfunction

Brow Ptosis

Lower Lid Ectropion

Lid Lag on Downgaze ≠ Lagophthalmos

Graves Ophthalmopathy

Congenital Ptosis

Scarring – post-op

NOT USUALLY NEUROLOGIC –
Exceptions:
PSPN, Parkinson's,
Aberrant IIIrd Nerve regeneration

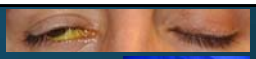
Treatment Options for Cicatricial Lagophthalmos with Exposure Keratopathy

- Lubrication
- Goggles
- Punctal Occlusion
- Tarsorrhaphy

LATER

- Lid Tightening
- Skin Grafting and Reconstruction

Exposure and Epithelial Surface Problems



- What do you do when you have:

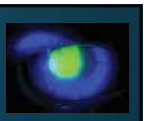
1. A corneal epithelial defect that won't heal.
2. A cornea with chronic PEK / Epitheliopathy from exposure or problems with the tear film
3. Chronic Chemosis

?

1st – attempt to address the underlying problem

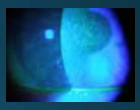
Exposure Related

- Eyelid Malpositions: Entropion/Trichiasis, Ectropion, Lid retraction, FES
- Lagophthalmos
  - Cicatricial
  - Neuro-paralytic (7th CNP, worsen when also 5th CNP)
- Orbital Disease(TED, Tumors, etc.) – Proptosis, Lagophthalmos, Chronic Chemosis



Tear Film Related

- Loss of Conjunctival Function from Inflammation, Tumor, Trauma, etc. goblet cells, lacrimal glands – Trauma, Inflammatory diseases (SJS, etc.)
- Loss of Meibomian function – blepharitis, inflammatory, etc.



Other

- Keratitis: Herpetic, active and non-responsive Bacterial/ Fungal ulcers to Rx, systemic inflammatory, vernal, neurotrophic
- Recurrent Erosion Syndrome - corneal dystrophies, trauma, diabetes, LSCD
- Topical Medications
- PBK
- Poor / Inadequate blinking for patient with severe head trauma / ICU

Options –Medical and Surgical

1. Lubrication – artificial tears , ointments
2. Lacrimal drainage occlusion - punctal plugs
3. Bandage Contact Lens, Scleral CTLs

4. Repair of any Eyelid Malpositions
5. Repair of Fornices - grafting
6. Tarsorrhaphy
7. Gunderson Flap
8. Limbal Epithelial Cell Transplantation??

Tarsorrhaphy
Temporary
Permanent

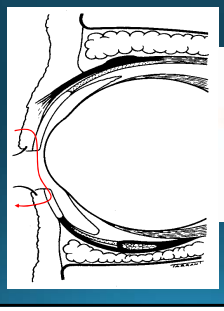
Indications

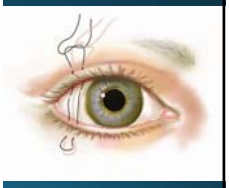
To protect the cornea in the case of:

- inadequate eyelid closure, for example due to facial nerve palsy or cicatricial (scarring) damage to the eyelids caused by a chemical or burns injury
- an anesthetic (neuropathic) cornea that is at risk of damage and infection
- marked protrusion of the eye (proptosis) causing a risk of corneal exposure
- poor or infrequent blinking, e.g. patients in intensive care or with severe brain injuries.
- To promote healing of the cornea in patients with:
  - an infected corneal ulcer, which is taking a long time to heal
- non-healing epithelial abrasions.
- Other indications include:
- To prevent conjunctival swelling (Chemosis) and exposure after ocular surgery
- To retain a conformer or other device, for example in children with Anophthalmos or adults after evisceration or enucleation.

Temporary Tarsorrhaphy

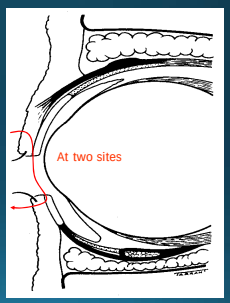
- One interrupted stitch- no bolster – very temporary
- Horizontal – spreads out the force
- mattress-like – with bolsters – 1-2 weeks



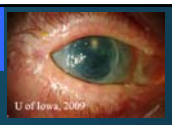


"Horizontal Mattress" with Bolsters

Suture – 5-0 Silk



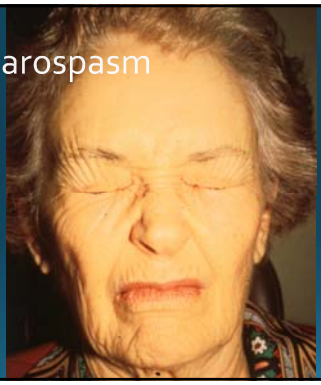
Permanent Tarsorrhaphy



Goal –
adhesion between upper and lower tarsal plates, not just skin.

Reversible

Blepharospasm



Blepharospasm – primary or secondary?

- Medications: antihistamines, dopamine stimulators, nasal contestants
- 5th cranial nerve irritation- Ocular or meningeal
  Ocular – Blepharitis, Dry eye, keratitis, uveitis, scleritis, etc.*
- Benign orbicularis myokymia
- Facial Myokymia – Pontine disease, MS**
- Other CNS- Parkinsons, PSP, Tardive Dyskinesia, Tourette's
- Other – Myotonic dystrophy, Excessive Blinking***
- Hemifacial Spasm (7th)
- Benign Essential Blepharospasm (BEB)

Treatment of Blepharospasm

- TREAT UNDERLYING CONDITION!!!*
- Systemic Medications of Little Value
  Clonazepam
- Alleviating Maneuvers** (JAMA Oph 2016;134:1247-1254)
- Botulinum injections
- Surgery
  Blepharoplasty
  Orbicularis myectomy
  Neuro-surgical decompression of VII

Botulinum Toxin

I have no financial interests or conflicts of interest.

Seven Serotypes A-G
Only two Serotypes
currently Used A and B

Type A XEOMIN® - incobotulinum toxin A

Type A BOTOX® - onabotulinumtoxin A

Type A DYSPORT® - abobotulinumtoxin A

Type B MYOBLOC® - rimabotulinumtoxin B

Differential Diagnosis Lists
Eyelid Signs

- Blepharospasm
- Ptosis
- Eyelash Problems
- Entropion and Trichiasis
- Ectropion
- Eyelid Retraction
- Lagophthalmos
- Seventh Nerve Palsy

Eyelid Edema

Inflammatory Appearance (red, warm, etc.)

First Consider Underlying Orbital Disease
- **Orbital Cellulitis, Pseudotumor, Wegener's**
- **Graves Ophthalmopathy, Orbital Varix**
- **Orbital Tumors that can mimic inflammatory process: Lacrimal Gland CA, Lymphoma, Lymphangioma, etc.**
- **Lacrimal Gland – Dacryoadenitis or tumor**
- **Sinus Mucocele**

Preseptal Cellulitis
- also think of early -HSV, HZO, or erysipelas (rapid strep),
- Periorbital necrotizing fascitis (β-hemolytic strep, staph A., pseudomonas)

Dacryocystitis / Dacryocystocele
Blepharitis
Contact Dermatitis – e.g. Neomycin, Gentamicin contact sensitivity
Urticaria / Angioedema
Conjunctivitis with contiguous lid edema
Insect Bite
Lid Tumors: Hordeolum / Chalazion, CA, ***Cutaneous Lymphoma***
Melkersson-Rosenthal Syndrome – (Granulomatous inflammation)

Without Inflammatory Appearance, consider above but also…

Allergic Eyelid Edema
Hormonal Shifts
Systemic Disorder – Cardiac, Renal, Hepatic, Thyroid with edema
Graves Ophthalmopathy – can just have lid edema w/o inflammatory appearance
Lymphedema after trauma, surgery to lids or orbit (e.g. lymphatics in lateral canthus)
Traumatic Leak of CSF into upper eyelid (JAMA Oph 2014;312:1485)
Blepharochalasis

Not True Edema, but might mimic it:
Dermatochalasis, Hidden Eyelid or Sub-Conjunctival Mass, Prolapsed Orbital Fat

Eyelid Mass / Lesions

- **Cystic Like / Fluid Filled**
  - Hydrocystoma /Sudoriferous Cysts – clear fluid
  - Sebaceous Cyst , Epithelial Inclusion Cyst – both usually have white/yellow appearance
  - Blister, Bulla, Vesicle (e.g. HSV), Pustule
- **Pedunculated**
  - Papilloma, Skin Tag, Cutaneous Horn
- **Darker / Pigmented**
  - Nevus
  - Melanoma – often irregular pigmentation and borders
  - Seborrheic Keratosis (SK) – sessile, stuck on appearance
  - Xanthelasma – yellowish – often medial canthal skin
  - Kaposi's Sarcoma
  - Some Cysts will have dark appearance clinically:
    - e.g. apocrine cyst, some inclusions cysts
- **Nodular - Commonly at Lid Margin**
  - Intradermal Nevus
  - BCCA
  - Hair Follicle Tumor

Recall signs of Malignancies
1) lash loss
2) ulceration, bleeding
3) telangiectasias
4) irregular pigmentation
5) distortion or destruction of eyelid anatomy

Vascular
- **Hemangioma**
- **Cherry Angioma – Bright red**
- **Varix**
- **Other: Kaposi's Sarcoma, Pyogenic Granuloma**

Crater / Ulcerated
- **Carcinomas (BCCA, SCCA, etc)**
- **Keratoacanthoma**
- **Molluscum Contagiosum**

***Don't Forget**: Chalazion, Hordeolum and their Mimics (e.g. Sebaceous Cell CA)*

Blepharospasm

***Primary*- Benign Essential Blepharospasm (BEB)**

Associations: Apraxia of eyelid opening, Meige's Syndrome and other cranial/cervical dystonias
Extrapyramidal disorders (Parkinson, Huntington, and basal ganglia infarction)

***Secondary* Blepharospasm**
- Medications: antihistamines, dopaminergics, nasal decongestants
- External Disease, Foreign Body, Keratitis
- Consider any cause of ***Photophobia (see list)***
- 5th CN Irritation* – Ocular (Uveitis, etc.) or Meningeal (meningitis, parasellar tumor), Trigeminal Neuralgia
- Paraneoplastic Syndrome – e.g. Anti-Hu / small Cell CA

Myotonic Dystrophy
Aberrant Facial Nerve Regeneration – after peripheral facial nerve palsy
Hemi- Facial Spasm - Low, but possible risk if CPA tumor or aneurysm
Orbicularis Myokymia – Usually only an upper or lower lid, as opposed to true Blepharospasm
Facial Myokymia – pontine glioma, MS, Neurodegenerative diseases: e.g. ALS, Huntington's Chorea
Tardive Dyskinesia – Multiple Meds can cause—not just neuroleptics (JNO 1998; 18:153)
Eyelid Nystagmus
Torrette's Syndorme
Excessive Blinking**

May Need to Differentiate from Just a Problem of Opening Eyelid(s)
- Apraxia of Eyelid Opening
  - Associated with BEB, PSNP, Parkinson's, Huntington's,
  - CNS Lesion - Frontal (and Parietal?) Lobe, Brainstem, Thalamus
- Dry Eye / Blepharitis / RES - Lids stuck to each other or cornea
- Ptosis

Ptosis

Levator (Dehiscence)
– Aging, Trauma, Post-op (e.g. CE), Post-Inflammation, CTL wear

Congenital, Hereditary
- *Levator Mal-development*, Marcus Gunn Jaw Winking, Blepharophimosis (BPES)
- Congenital Cranial Dysinnervation Syndromes (e.g. Congenital Fibrosis)

Neurological
- 3rd Nerve Palsy, Horner Syndrome
- Hemispheric Stroke (unilateral or bilateral – associated with hemiparesis)*
- Migraine – Isolated Ptosis? "seen with Hemicrania Continua" – can have associated isolated ptosis
- Immune Mediated Polyneuropathies –e.g. Guillain – Barre Syndrome

Orbital Disease
- Inflammatory: Cellulitis, Pseudotumor, Graves
- Tumor: Lymphoma, etc.

Myogenic
- *Myasthenia Gravis*, Lambert-Eaton Myasthenic Syndrome
- CPEO
- Muscular Dystrophies
  e.g. Oculopharyngeal MD, Myotonic MD

Mechanical
- Eyelid Tumor (e.g. NF), Chalazion
- Excessive Dermatochalasis and/or Brow Ptosis
- Floppy Eyelid Syndrome (Laxity, Lash Ptosis)

Inflammatory
- Eyelid, Orbit, Uveitis, Conjunctivitis, Keratitis (e.g. SLK)

Other
- Prostaglandin (Topical) Associated Orbitopathy**
- Observed associations with isolated ptosis: elevated BP

Pseudo-Ptosis
- Enophthalmos (see list)
- Phthisis or small globe or Anophthalmos
- Blepharospasm, Dermatochalasis or Brow Ptosis Mistaken for ptosis
- Hypertropia, Hypotropia

Eyelashes*

Madarosis (Loss of Lashes)
- R/O Carcinoma – e.g. BCCA, Sebaceous Cell CA
- Chronic infection – e.g. Herpetic, Staph, Fungal, Mites, Blepharitis
- Endocrine – e.g. Hyper and hypo parathyroid and thyroid, hypopituitism
- Dermatoses - e.g. Dermatitis (atopic, contact), ichthyosis, lichen planus,... (many)
- Trauma – radiation, chemical, Thermal, tattooing, surgery, cryo
- Congenital disorders - multiple
- Drugs and Toxins - e.g. Arsenic, Chemotherapy, Botulinum, ...
- Systemic Conditions – e.g. Parry-Rhomberg, VKH, Lupus, Sarcoidosis,...

Hypertrichosis (Excess Lashes = Trichomegaly)
- multiple congenital / genetic causes
- frequent manipulation
- Paraneoplastic syndrome
- malnutrition, anorexia, pregnancy, thyroid problems, lupus, uveitis
- Drugs: prostaglandin analogs (e.g. bimatoprost)

* Comprehensive Listing : Survey of Ophthalmology 2006; 51:550

Eyelid Malpositions
Entropion and Trichiasis

Lower Lid Entropion and Trichiasis
- Involutional (Senile) – can have spastic (orbicularis) component
- Acute Spastic Entropion – after trauma or surgery
- Cicatricial (see below)
- Congenital / Developmental – e.g. Epiblepharon
- Distichiasis – abnormal lashes growing from posterior lid margin (meibomian orifices) could be hereditary or from inflammatory process (see below)

Upper Lid Entropion and Trichiasis
- Mechanical – excessive Dermatochalasis
- Cicatricial (see below)
- Distichiasis

Cicatricial Causes (Most cases due to secondary scarring and contracture of posterior lamella)
- Previous Trauma or Surgery at or near eyelid margin
- Chemical Burn
- HZO
- Chronic Blepharo-conjunctivitis - e.g. Acne Rosacea
- Trachoma
- Stevens-Johnson Syndrome, Ocular Cicatricial Pemphigoid

**Sometimes Orbital Disease can present with eyelid malpositions*

Eyelid Malpositions - Ectropion

Lower Lid Ectropion

- Senile – with horizontal laxity, check for Medial or Lateral Canthal Tendon laxity
- Cicatricial (below)
- Combination of both above
- Paralytic – 7th nerve palsy, MG
- Mechanical – Tumor or Big Festoons
- Congenital – Ichthyosis; Euryblepharon – excess horizontal skin

Upper Lid Ectropion

- Cicatricial Processes (below)
- Congenital – e.g. Ichthyosis
- Floppy Eyelid Syndrome – Horizontal Laxity – no true ectropion

Cicatricial Changes (of anterior lamella)

- Trauma to Eyelids and Face
- Burns - Thermal and Chemical
- Sun Damage, Carcinoma
- Previous Eyelid and Adnexal Surgery
- Chronic Inflammation: Rosacea, Atopic Dermatitis, HZO, Infection

*Sometimes Orbital Disease can present with eyelid malpositions

Eyelid Retraction

Graves Ophthalmopathy- #1 – unilateral or bilateral

Other Causes of Hyperthyroidism

Other Orbital Inflammatory or Neoplastic Conditions

- Orbital Pseudotumor, FB, Granulomatous Inflammation, Neoplasm

Cicatricial Process

Skin or Posterior Lamellar (Trauma, Burns, Systemic or Local Inflammatory Disorders)

Trauma / Post-Operative

- *Entrapped Inferior Rectus*
- *Vertical Rectus Muscle Recession Surgery*
- *S/P Eyelid or Conjunctival Surgery*

Neurologic

- e.g. Dorsal midbrain syndrome (Collier's sign), aberrant regeneration of the 3rd CN

Metabolic (thyroid, cirrhosis, uremia, Cushing's syndrome, hypokalemia)

Pharmacologic – sympathomimetics, corticosteroids

Congenital – persistent or periodic unilateral retraction reported

Physiologic / Normal Variant – about 2% of population has MRD>5.3mm

Pseudo-retraction

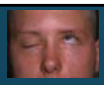
– Contralateral Ptosis (Herring's Law)

- Proptosis
- Lower Lid Laxity
- Large Myopic Eye, prominent glaucoma filtering bleb

Sometimes Orbital Disease can present with eyelid malpositions

Lagophthalmos

Inability to Close Eyelids



Neurological

- Seventh Nerve Palsy

Cicatricial (Scarring)

- Trauma
- Burns
- Surgery
  - Blepharoplasty, Ptosis Surgery
  - Tumor resection

Orbital Condition

- Proptosis: Graves Ophthalmopathy, etc. (see list)
- Orbital Inflammatory or Neoplastic Processes

Myogenic – MG, Muscular Dystrophies, CPEO

- Botulinum Injections

See *Exposure Keratitis*

Don't Confuse with

Lid Lag on Downgaze

- Congenital Ptosis
- Graves Ophthalmopathy
- Aberrant Regeneration after 3rd CNP
- Neurologic and Muscular Disease
  - Supranuclear Palsy
  - Myotonic Dystrophy
  - MG?
- Post-op Upper Eyelid Procedures
- Possible Sign of Other Orbital Disease

Seventh Nerve Palsy

Hemifacial Paralysis with Lagophthalmos

- Motor Strip Lesion (Upper Motor Neuron) → Contralateral Lower Face Paralysis

- Peripheral Nerve Palsy – Ipsalateral Upper and Lower Face Paralysis
  - CPA Tumor – e.g. Acoustic Neuroma
  - Other tumors – Parotid, Skull based, temporal bone, external auditory canal
  - Trauma – facial, skull base (temporal bone), birth
  - Lyme Disease – *B. Burgdorferi*
  - HIV infection
  - Central – CVA (e.g. superior cerebellar a. infarct – deafness, Horner's, 7th CNP)
    - Parkinson's
  - *Ramsay-Hunt Syndrome* (Herpes Zoster Oticus)
  - Mastoiditis / Otitis – 6th and 7th CNP possible
  - External Auditory Canal and Middle Ear—surgery, tumor
  - Other - Neuro-Sarcoidosis, Leprosy, Pregnancy (3rd Trimester), MS
    - Vasculitis, DM, Uremia

A 7th Nerve Palsy is not necessarily a Bell's Palsy!

and ***Bell's Palsy*** (Idiopathic 7th CNP)

Most Common 7th Nerve Palsy, but better to put Bell's Palsy down at bottom the list – to make you think of other things first