Saggy, Baggy, Bumpy Lids: OD’s Role in Oculoplastics
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Oculoplastics Considerations

**Functional**
- Orbital oncology/surgery
- Tumors
- Graves disease
- Evisceration / enucleation
- Tear duct surgery
- Reconstructive / functional
  - Ptosis
  - Eyelid malposition
  - Eyelid lesion

**Cosmetic**
- Surgical procedures
  - Eyelid lift
  - Browlift
- Non-surgical
  - Collagen/fat injectable fillers
  - Eyelash growth

Lumpy Bumpies

**Most Common**

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**Adnexal**

- Apocrine hidrocystoma
- Eccrine hidrocystoma
- Trichoepithelioma
- Filoblastoma
- Epidermal inclusion cyst
- Milia
- Syringoma
- Sebaceous hyperplasia
- Sebaceous cyst
- Chalazion
- Sebaceous carcinoma

**Most Dangerous**

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**Strongly recommend treatment**

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Eyelid Histology

Skin layers
- Epidermis
  - Stratum corneum
  - Stratum lucidum
  - Stratum granulosum
  - Stratum basalis
    - Basal cells
    - Melanocytes
- Dermis
  - Collagen, elastin
  - Adnexal structures

Eyelid Histology

• Adnexa
  - Hair follicle
  - Sebaceous glands (of Zeis)
  - Apocrine sweat glands (of Moll)
  - Eccrine sweat glands
  - Melobian sebaceous glands
  - Caruncle
  - Conjunctiva
    - Non-keratinized epithelium
    - Mucus cells

Definitions

• Neoplasm / Tumor – An abnormal mass of tissue that results when cells divide more than they should or do not die when they should. Tumors may be benign (not cancer), or malignant (cancer)
• Benign – Not cancerous. Benign tumors may grow larger but do not spread to other parts of the body. Also called nonmalignant.
• Malignant – Cancerous. Malignant cells can invade and destroy nearby tissue and spread to other parts of the body

• Hyperplasia - An increase in the number of cells in an organ or tissue. These cells appear normal under a microscope. They are not cancer, but may become cancer.
• Dysplasia - Cells that look abnormal under a microscope but are not cancer.

ABCDEs of Lid Lesions

• Asymmetry - Is it asymmetrical?
• Border – Is it irregular?
• Color – Are there variations in color?
• Diameter - Is it larger than 6mm diameter?
• Evolution – Is it changing?

***If the answer is yes, consider malignancy

Epithelial Benign Squamous Papilloma

• Most common benign tumor of the eyelids
• Benign hyperplasia of epidermis in folds over fibrovascular core, possible with hyperkeratosis but with no dysplasia
  - Sessile / flat
  - Pedunculated

Epithelial Benign Seborrheic Keratosis

• Slow growing, discrete round or oval or round lesion
• Papilloma with irregular acanthosis, variable pigmentation, and variable hyperkeratosis
• Appears “greasy” and “stuck-on” with sebaceous hyperplasia and accumulated desquamated keratin
Epithelial Benign Melanocytic Nevus (mole)
- Benign proliferation of melanocytes
- Congenital or acquired
- Life cycle:
  - Junctional—within stratum basale, young, dark, flat
  - Compound—descending partially into dermis, middle-aged, still pigmented, domed
  - Intradermal—completely below the epidermis, old, domed, often depigmented

Junctional Nevus

Compound Nevus

Intradermal Nevus (mole)

Epithelial Malignant /Premalignant Melanoma
- Invasive, metastasing melanocyte proliferation
- Hallmarks: Heterochromia, >10mm, change
- Types
  - Superficial spreading: 80% of cutaneous melanomas
  - Nodular: most common eyelid
  - Lentigo maligna melanoma
  - Remember your ABCDEs!!

Epithelial Malignant /Premalignant Basal Cell Carcinoma
- 90% of all malignant eyelid tumors
- Types
  - Nodular
  - Ulcerative (rodent ulcer)
  - Cystic
  - Morphewform (sclerosing)
  - Pigmented
  - Invasive, non-metastasizing nests of basal cells
  - Pearly borders, telangiectasia, ulceration, lash loss
  - Commonly on lower lid, medial canthus
Basal Cell Carcinoma

Nodular

Ulcereative

Epithelial Malignant /Premalignant
Squamous Cell Carcinoma

• Invasive & metastasizing nests of spinosum or granulosum cells with keratin pearls
• Ulceration develops under keratin crust
• Much less common than basal cell cancer

Squamous Cell Carcinoma

Apocrine Hidrocystoma
(cyst of Moll, sudoriferous cyst)

• Blockage of an apocrine sudoriferous gland of Moll resulting in sub-epidermal cyst
• Usually solitary
• Cystadenoma is a benign proliferation of multiple cysts

Epidermal Inclusion Cyst

• Cyst of sequestered, degenerated keratin from a follicular infundibulum
• Surface pore
• Often misnamed “sebaceous cyst”
  • – not sebaceous

Epidermal Inclusion Cyst
Comedone (Blackhead)
- Sequestered sebaceous secretions
- Gland orifice blocked with dried, blackened secretions

Hordeolum (Stye)
- Acute staphylococcal infection of a gland of Moll or Zeiss (external hordeolum) or Meibomian gland (internal hordeolum)

Chalazion
- Chronic, non-infected inflammatory nodule due to Meibomian blockage and secretion backup into surrounding tissue

Pyogenic Granuloma

Sebaceous Carcinoma
- Adenocarcinoma of Meibomian or Zeis glands
- Can mimic chronic chalazion or blepharitis
- Pagetoid spread
- Metastasis
- Highly malignant
  - 5-10% mortality
What About Tearing???

9 Steps to Evaluating the Tearing Patient

1. History
2. Lid Exam, Palpation of Lacrimal Sac
3. Slit Lamp Exam
4. Schirmer Tear Testing
5. Dye Disappearance Test & Jones I
6. Lacrimal Irrigation, Probing, & Jones II
7. Lower Lid Taping
8. Nasal Speculum Exam
9. Radiography

The Big Four

1. History
2. Lid Exam
3. Dye Disappearance Test
4. Lacrimal Irrigation

Not all steps are needed in every patient

Step 1: History

• Usually will distinguish hyperlacrimation from reduced excretion:
  • Hyperlacrimation associated with discomfort
    • Blepharitis—itch, burn
    • Allergic conjunctivitis—itch
    • Corneal foreign body—pain
    • Trichiasis—irritation
    • Dry eyes—FB sensation, burn
    • Iritis—ache, photophobia
    • Photosensitivity—photophobia

• Prior treatment:
  • Artificial tears, allergy drops
  • Punctal plugs, lacrimal probing

Step 1: History

• Usually will distinguish hyperlacrimation from reduced excretion:
  • Hyperlacrimation associated with discomfort
  • Hyperlacrimation usually not monocular
  • Hyperlacrimation rarely causes frank epiphora

• Prior treatment:
  • Artificial tears, allergy drops
  • Punctal plugs, lacrimal probing
Step 1: History

- Time course, duration
  - Severe epiphora, intermittent: lacrimal stone
  - Duration less than 6 months: may benefit from probing or intubation
  - "Slowly progressive" does not really help distinguish between PANDO and secondary (neoplasia, infiltration)

- Associated disorders
  - Previous surgery, trauma
  - Previous infections (conjunctivitis, dacryocystitis, sinusitis)
  - Facial nerve palsy

Step 2. Lid Exam

- Facial musculature, CNVII weakness
- Lid laxity
- Ectropion
- Entropion
- Lacrimal sac palpation

Step 3. Slit Lamp Exam

- Canalicular punctal size, position
- Tear meniscus
- Lid motion during blink
- Conjunctivochalasis
- Ocular Surface
- Everted upper lid for papillae
- Lid margin, lashes for blepharitis

Step 4. Schirmer Tear Testing

- Tear production over 5 minutes without anesthesia (test before any other drops instilled)—Schirmer I

- Tear production over 5 minutes with anesthesia—Basal Secretory Rate

- Variations:
  - 1 minute, multiply by three
  - 6 minutes, subtract out first minute

Step 5. Dye Disappearance Test

- Functional tear drainage test, positive result could be due to:
  - Tear lake malposition
  - Poor tear pump function
  - Punctal stenosis or blockage of canaliculus, sac or NLD

Step 6. Lacrimal Irrigation

- Three possible outcomes
  - Free flow to nose—No obstruction (beyond punctum)
  - Reflux out upper punctum upon irrigating lower—obstruction beyond common canaliculus
  - Resistance to irrigation or reflux around irrigation cannula—canalicular obstruction

- So what is positive?
Step 7. Lower Lid Taping

- Confirms suspected pump dysfunction
- Perform “lateral tarsal strip” with tape, tightening the lower lid temporarily
- Effective only in cases of constant epiphora, negative result does not predict poor surgical outcome

Step 8. Nasal Speculum Exam

- NLD obstruction may be due to intranasal pathology
  - Swollen inferior turbinate
  - Nasal polyp or other neoplasia
- Nasal anatomy needed for planning DCR

Step 9. Radiology

- CT scan
  - Check nasal anatomy for DCR
  - Check for sinus disease
- Dacryocystography
  - Radiopaque dye irrigated into canaliculus
  - Outlines lacrimal sac obstructions (stones, polyps)
  - Shows the level of NLD obstruction
- Dacryoscintigraphy
  - Radioactive tracer placed in tear lake, followed through excretory system
  - Can confirm drainage dysfunction in absence of anatomic block

Surgical Treatments for Tearing

- Snip punctoplasty
- Stenting procedures
- Dacryocystorhinostomy
Rational Treatment of The Tearing Patient

Blunt Trauma
- Proptosis
- Contusion/SCH
- Retinal detachment
- Commotio Retinae
- Traumatic uveitis
- Traumatic hyphema
- Traumatic cataract
- Blow out fracture

Blowout Fracture
- Check VA
- Base and medial walls of orbit are very thin
- Does not need to be a major trauma
- Look for trapped EOMs
- Sunken eye
- Infraorbital hypoesthesia
- Diplopia
- Pain on eye movement
- Nausea

Repair?
- Within 2 weeks
  - Symptomatic diplopia within 30º of primary gaze
  - Muscle entrapment (prevent ischemia and necrosis)
  - Fracture greater than 50% of orbit floor
  - Displaced orbital rim fracture
  - > 2mm of enophthalmos
  - Significant hypo-ophthalmos
- Monitor
  - Diplopia outside central 30º
  - Modest isolated fractures
  - Improvement over first 2 weeks

Orbital Trauma in Children
- Trap door orbital floor fractures are very common
  - More elastic orbits
  - More common to get muscle entrapment
  - Evaluation for repair typically in 5-7 days

Pearls
- Initial restriction in ocular motility is often secondary to orbital edema
- If no entrapment on CT, re-evaluate after edema resolves
Optometry’s Role in Cosmetic Procedures

Where Does Optometry Fit In?
- Glasses
- Contact lenses
- Refractive surgery
- Cosmetic contact lenses
- Cosmetics
- Face creams
- Mascara
- Eyelid cleansers
- Botox
- Blepharoplasty
- Brow lifts
- Red eyes

Blepharoplasty
- Indications
  - Bilateral excess skin/fat weighing down on lashes
  - Superior VF decrease
  - Eyes seem ‘hooded’
  - Brow ache & fatigue
  - Low MRD (<4mm), improved when skin lifted off lid
  - Normal LI (10-15mm)
- Relative contraindications
  - Unilateral ptosis
  - Previous blepharoplasty

Bleph and Brow
- Photos
  - Perform VF Taped / Untaped

Blepharoplasty Post op
- Antibiotic ointment over stitches BID until suture removal
- Cold compresses q1h for 15 mins X 2 days
- Swelling & bruising normal for a few weeks
- Painkillers given PRN
- RTC 5-10 days for suture removal and photos

Lower Blepharoplasty
- Indications
  - Loose skin, dark circles, orbital fat
  - Trans-cutaneous
  - Trans-conjunctival
  - Electrocautery to hide incision
  - Removed or repositioned
  - Fat transfer to remove hallowing
### External Levator Advancement

**Indications**
- Bilateral ptosis due to loss of levator tendon support attachment to lid
- Low MRD (<4mm) even when brow and skin are lifted off
- Decreased LF (measured to be <8mm while controlling frontalis)

**Relative contraindications**
- Unilateral ptosis
- Smooth lid skin without dermatochalasis

### External Levator Advancement Post op

- Antibiotic ointment over stitches BID until suture removal
- Cold compresses q1h for 15 mins X 2 days
- Swelling & bruising normal for a few weeks
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- RTC 5-10 days for suture removal and photos
- At 1 week visit, may tighten or loosen sutures to adjust height of levator

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### Fasanella Servat

**Indications**
- Ptosis corrected by Mullers muscle function
- Mild ptosis with good levator function
- Ptosis will decrease with 10% phenylephrine instillation
- Unilateral ptosis
- Absent lid crease

**Relative contraindications**
- >2mm ptosis compared to other eye by MRD or IPF
- Ocular co-morbidity: corneal transplant or bleb (stitches rubbing on cornea)

### Fasanella Servat Post op

- Antibiotic ointment in the eye BID
- Cold compresses q1h for 15 mins X 2 days
- Less swelling & bruising than previous procedures
- Painkillers given PRN
- RTC 5-10 days for corneal abrasion precautions and photos

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### Direct Brow Lift

**Indications**
- Ptosis due to eyebrow hanging below supraorbital rim
- Improvement in a visual-field deficit caused by overhanging eyebrow skin
- Relief of ocular fatigue caused by compensatory overactivity of the frontalis muscle
- Aesthetics

**Relative contraindications**
- Unilateral ptosis (unilateral scar)
- More obvious incision line

### Direct Brow Lift Procedure

- Photos show eyebrow below supra-orbital rim
- Measure how much skin excision is needed
- Make skin incision
- Excise skin flap
- Stitch it closed
- Same post op as a blepharoplasty
Endotine Brow Lift

- System that uses absorbable implants inserted under skin to hold subbrow tissues in the desired lifted position
- Fibrous structures form to hold deeper structure after procedure
- Can remove lid tissue without changing brow position
- Can remove upper eyelid skin and reposition the brow in a single surgical session

Endotine Brow Lift Post Op

- Antibiotic ointment over sutures BID
- Cold compresses q1h for 15 mins X 2 days
- Swelling & bruising normal for a few weeks
- Painkillers given PRN
- Sutures removed in 5-10 days
- Patients can feel soreness for weeks
- Anchor absorbs in 3-4 months but periosteum heals in new position within 1 week

Intense Pulsed Light

- The specific mechanism of action is not well understood but is believed to be partially due to the thermal heating of the meibum coupled with the therapeutic effects of treating superficial telangiectasia

Analysis of Cytokine Levels in Tears and Clinical Correlations After Intense Pulsed Light Treating Meibomian Gland Dysfunction

- Purpose: To investigate the change from baseline of inflammatory markers in tears of dry eye disease (DED) subjects owing to meibomian gland dysfunction (MGD) after intense pulsed light (IPL) treatment and meibomian gland expression (MGE) compared to sham treatment, and the correlations with ocular surface parameters.
- Conclusions: The study results suggest that IPL can significantly reduce inflammatory markers in tears of patients suffering with DED owing to MGD after IPL treatment. These findings indicate that IL-17A and IL-6 play roles in the pathogenesis of DED owing to MGD, and the reduction of the inflammatory factors is consistent with the improvement of partial clinical symptoms and signs.

Radiofrequency

- ThermiEyes™:
  - FDA cleared (K130689) and indicated for use in dermatological and general surgical procedures for electrocoagulation and hemostasis; creation of lesions in nerve tissue.
  - Associated with improving skin laxity and wrinkle reduction using a Radio Frequency Thermistor Heating Device
Botulinum Toxin

- Inhibits neurotransmission at neuro-muscular junction (acetylcholine, others)
- Leads to chemical denervation striated muscle
- Peaks at 2 weeks
- Neuronal sprouting heralds return of function @ 3 – 6 mos.

Botulinum Toxin

- On-label therapeutic uses in ophthalmology
  - Blepharospasm
  - Hemi-facial spasms
  - Strabismus
- Off-label therapeutic uses in ophthalmology
  - Protective ptosis → induce upper lid ptosis and closure
    - Lagophthalmos s/p acute Bell's Palsy, exposure keratopathy, poorly healing defect
  - Alternative to permanent tarsorrhaphy
  - Tx of filamentary keratitis with a blepharospasm component

ZYTAZE®

- ZYTAE® provides nutritional support to enhance and prolong the effectiveness of botulinum toxin injections in the treatment of blepharospasm, hemifacial spasm or facial cosmetic procedures.
- ZYTAE® is specially formulated with a unique patent-pending combination of organic zinc along with phytase (an enzyme that neutralizes phytates in the digestive tract aiding in the absorption of zinc) to enhance the effectiveness of botulinum toxin injections.
- Each Capsule Contains:
  - 25 mg Zinc Citrate
  - 500 mg Phytase

ZYTAZE® Study

In the completed formal study* consisting of 77 patients, ZYTAE® again demonstrated a significant increase in the effect and duration of botulinum toxin injections. In fact, the duration of effect increased from 23.6% in the pilot study to 30% in the completed formal study. The completed formal study has been published in in the Journal of Drugs in Dermatology.

The Aging Face—What Can Fillers Do?

- Fill in rhytids (wrinkles)
- Restore volume and youthful appearance
- Boost elasticity
- Some stimulate collagen production

What Fillers CAN’T do...

- Reduce excess skin
- Improve skin texture
- Decrease hyperpigmentation
Effect and Duration

• Immediate results!
• Length of effect varies depending on treatment site and type of filler
• When filler breaks down and resorbs, return for another treatment

Choosing the Right Dermal Filler

• Discuss with patient which areas are bothering him/her
• Discuss what type of dermal filler will work best in those specific location
• Prioritize the places and types of filler that will be injected

Conclusions

• Many opportunities for optometric comanagement!
• Take an active role in both the vision and medical management of our patients!
• We are all judged by the visual outcomes our patients and quality of vision is the key!