Lesion Identification and Removal

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Disclaimer

- All information was current at the time it was prepared
- Prepared as a tool to assist doctors and staff and is not intended to grant rights or impose obligations
- Prepared and presented carefully to ensure the information is accurate, current and relevant
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- Some of the photography and videography used in this presentation are from outside sources.

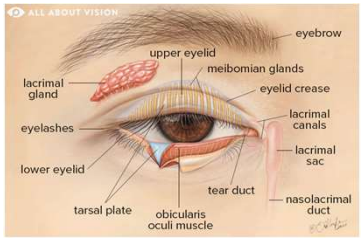
Function of the Eyelid

- The eyelids help to:
  - Shield the cornea from any foreign elements
  - Protect the cornea & conjunctiva from drying
  - Blink to create tears to moisturize the cornea
  - Protect the eye from unwanted light

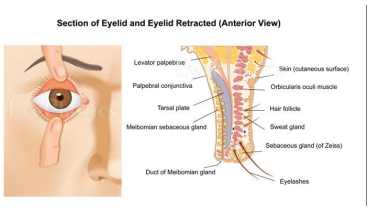
Anatomy & Histology of the Eyelid

- The eyelid's outermost structure is the skin. It is the thinnest skin on the entire body due to not having any subcutaneous fat.
- Moving inward, the next structure is the orbicularis oculi- the muscle that helps to close the eyelids when contracted.
- Next is the tarsal plate which is most of the structure of the eyelids, due to dense connective tissue. It also includes the meibomian glands (~30 glands for upper and 20 for lower) and hair follicles (associated with glands of Moll and Zeis to help secrete sweat and lipids).
- Last is the palpebral conjunctiva which is made of non-keratinizing squamous epithelium. It contains goblet cells that secrete mucin to assist in lubricating the ocular surface.

Anatomy & Histology of the Eyelid



Anatomy & Histology of the Eyelid



Lid Lesion Work-up

- How long has it been there?
- Is it irritating or bothersome?
- Has it changed or grown?
- Does it ever bleed or scab over?
- Does it itch?
- History of cancer?

Lid Lesion Assessment

- Asymmetric?
- Abnormal blood vessels (telangectasia)?
- Borders irregular?
- Bleeding?
- Color irregular or multicolored?
- Diameter more than 5-6mm?
- Evolving (has it changed)?
- Hair loss in affected area?

Benign Epithelial Tumors

- Squamous papilloma
- Seborrheic keratosis
- Inverted follicular keratosis
- Pseudoepitheliomatous hyperplasia
- Keratocanthoma
- Cutaneous horn

Cutaneous Horn

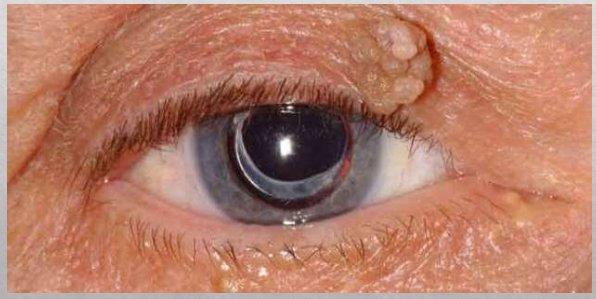
- Rare lesion of the eyelid that is typically on sun-exposed areas and most often found in elderly patients. Although, typically benign, these should always be examined thoroughly for any suspicions of malignancy.
- The horn is not the concern of this lesion, due to it just simply being formed by dead keratin.
- Treatment: excision with biopsy to confirm no malignancy.

Seborrheic Keratosis

- Brown-black lesion that is usually elevated with a stuck-on appearance. Typically, in middle-aged or elderly patients.
- These lesions begin as small, light, yellow-tan plaques then increase in size and develop a greasy crust-like appearance.
- Sudden development of multiple lesions is a sign of Lester-Trelat (could signify malignancy).
- Treatment: removed by shave biopsy or radiofrequency therapy

Pseudoepitheliomatous Hyperplasia

- Benign lesion of the epithelium that develops out of reaction to a response to an infection, inflammatory condition, trauma, pharmaceuticals or neoplasticism condition. They are typically elevated with irregular surface and can be ulcerated or crusting.
- Has been known to form due to vernal keratoconjunctivitis (VKC).
- They can appear very similar to squamous cell or basal cell carcinoma.
- Treatment: radiofrequency therapy

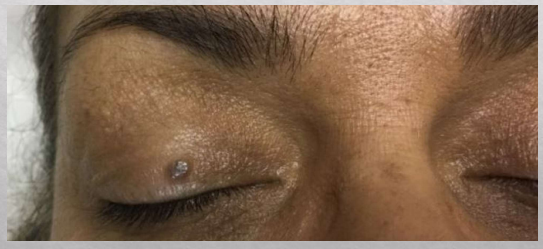


Squamous Papilloma

- The most common benign epithelial tumor of the eyelid. They are pedunculated or sessile and have a papillary shape with keratinized surface. They can be found in children and adults.
- Viral- multiple pedunculated or sessile lesions in children and adults. These can be left alone to spontaneously resolve, excision, radiofrequency, or oral cimetidine. They do have a high recurrence rate.
- Nonviral- single pedunculated or sessile lesion in older patients. Very difficult to differentiate from squamous cell carcinoma. These can receive cryotherapy or excision.

Keratocanthoma

- This lesion has been labeled benign for many years, but more recently can be considered a low-grade squamous cell carcinoma. It grows rapidly (growing double or triple in size) for 3-4 weeks, then begins to resolve in 3-4 months, leaving a scar.
- An ulcer typically forms in the center, resembling a crater-like morphology, that is a mass of keratin. It can progress to squamous cell carcinoma.
- Treatment: Oculoplastics consult. Ranges from monitoring to excision.

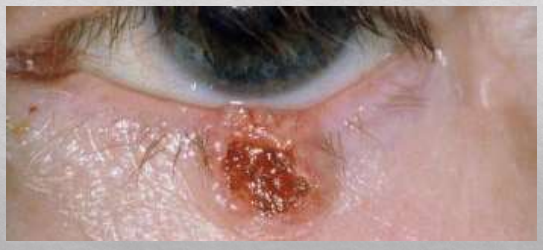


Inverted Follicular Keratosis

- Rare, benign tumor of the follicular infundibulum. Typically, a solitary lesion of the eyelid. It is papillary or nodular and may or may not be pigmented.
- It is very difficult to differentiate it from other lesions and therefore is most often diagnosed through histopathology report. It is thought to be a variant of seborrheic keratosis.
- Treatment: topical 5% imiquimod cream.

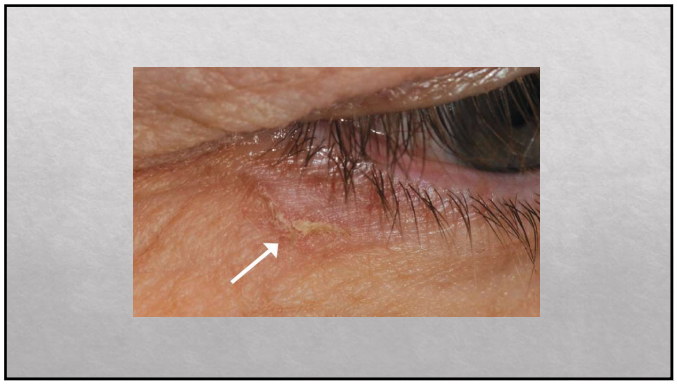
Premalignant & Malignant Epithelial Eyelid Tumors

- Actinic keratosis
- Basal cell carcinoma
- Squamous cell carcinoma
- Sebaceous carcinoma



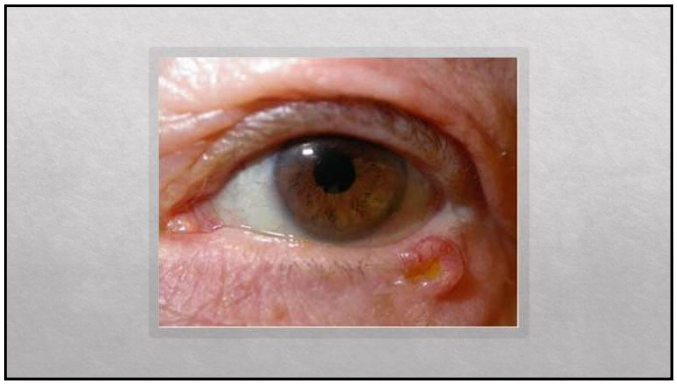
Squamous Cell Carcinoma

- The second most common eyelid malignancy, found in stratum spinosum. Although, less common than BCC, it is more aggressive. Roughly, 20% of cases metastasize to regional lymph nodes.
- It varies in appearance, looking very similar to basal cell carcinoma, except no telangiectasia is involved and growth is more rapid.
- Usually appears as red and scaly plaques, nodular rolled edges with a central ulcer.
- Typically found in older patients and usually develops from actinic keratosis.
- Treatment: Oculoplastics consult. Excision until it is confirmed that the histology is clear.



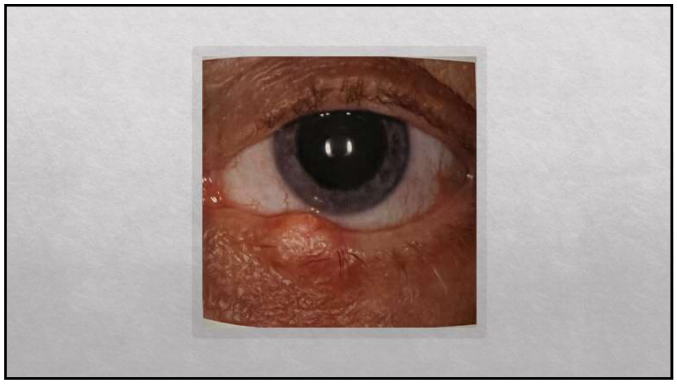
Actinic Keratosis

- Pre-malignant lesion that is round, erythematous with a scaly surface. Usually found in fair-skinned middle-aged patients. The most common pre-cancerous lesion.
- Precursor to squamous cell carcinoma but is not clear the percentage that undergoes the transformation.
- Treatment: oculoplastics consult. excision biopsy.



Basal Cell Carcinoma

- The most common eyelid malignancy, most likely on sun exposed lower eyelids or medial canthus. They are found in the stratum basale layer of the skin. They are also the least likely to metastasize.
- There are two forms: nodular (firm nodule often with telangiectatic vessels, sometimes with an ulcerated center) and morpheaform (firm, flat, subcutaneous lesion with indistinct margins that can sometimes result in an eyelid defect).
- Typically, early lesions are raised and pearly, whereas later lesions are ulcerated. Madarosis is common with these lesions.
- Treatment: Oculoplastics consult. Excision with biopsy and optional cryotherapy and radiation.



Sebaceous Carcinoma

- Most often these arise from the meibomian glands but can also develop from sebaceous glands of the eyelashes, caruncle or eyebrow. They are the most likely to metastasize.
- Commonly found in middle-aged or elderly patients. Often confused with with recurrent chalazia or uncontrollable blepharitis.
- Associated with madarosis, rapid growth and being acute.
- Treatment: Oculoplastics consult. Excision until it is confirmed that the histology is clear.

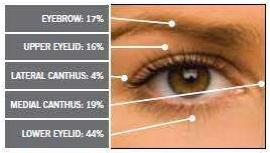
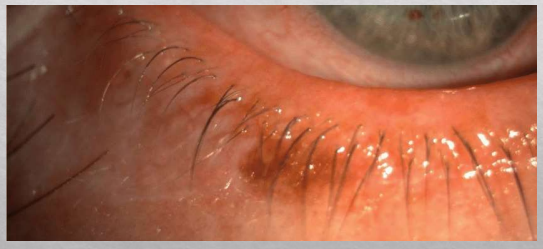


Figure 2. *Distribution of Eyelid Skin Cancers*

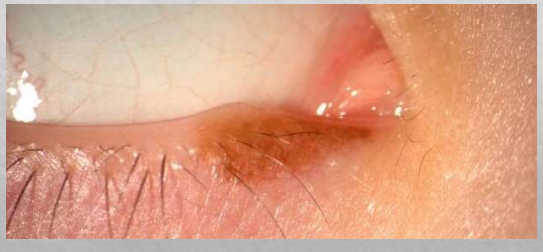
Melanocytic Eyelid Tumors

- Freckles
- Lentigo simplex
- Solar lentigo
- Eyelid nevi
- Cutaneous melanoma of the eyelid



Lentigo Simplex

- Small, flat lesions that are brown to black. They are usually indistinguishable from nevi, but they are affected by light exposure.
- They have an increase in basal melanocytes and melanophages in the upper dermis.
- Treatment: monitor



Eyelid Nevi

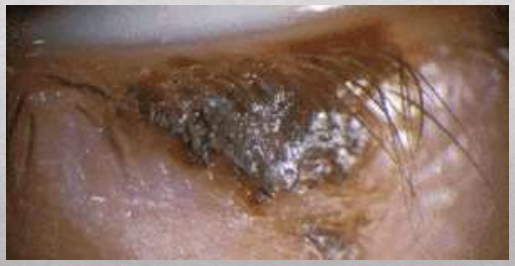
- Common benign lesions that vary in shape, size and time of development. They are typically round to oval with various amounts of uniform melanin. There is a less than 1% chance of growth into melanoma.
- Melanocytes can clump at the epidermis, dermis, or the intersection of the two.
- There are congenital nevi (~1% of newborns), Nevus of Ota ((oculodermal melanocytes) bluish discoloration of eyelid), acquired nevi (develop in childhood and can change into adolescence).
- Treatment: photodocument every 3-6 months for any changes. monitor until suspicious, then biopsy removing the lesion to the subcutaneous fat.

Freckle

- Flat, small brown spots on sun exposed skin that typically darken with sun exposure and can fade in its absence.
- Hyperpigmentation of the basal cell layer
- Treatment: monitor

Solar Lentigo

- Light to dark brown lesions that are typically in sun exposed areas and are found in 90% of elderly Caucasians.
- They have an increase in melanocytes in the basal cell layers and exhibit irregular tortuosity.
- Treatment: monitor

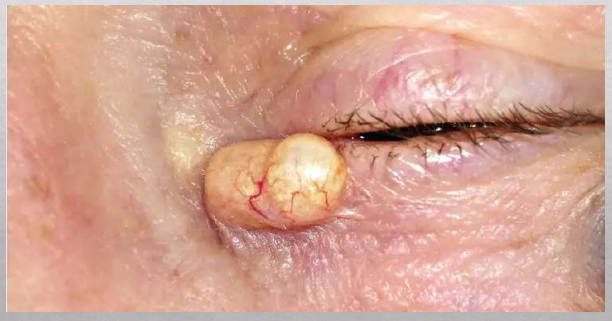


Malignant Melanoma of the Eyelid

- Malignant tumors of melanocytes. Most likely in fair-skin elderly patients exposed to ultraviolet radiation. Peak age is 40-70. Hallmark is pigmentation, but there is a possibility of them being non-pigmented.
- Most eyelid melanomas arise on the lower eyelid and occur either de novo or from preexisting pigmented lesions that evolve over time. Most lesions are less than 1 cm but grow vertically or deep below the epithelial surface.
- Causes 75% of deaths related to skin cancer.
- Typically asymptomatic, but itching can be a warning sign. The biggest indicator is a change in color, size and shape (ABCDE).
- Treatment: Oculoplastics consult. wide excision and radical surgery if extensive conjunctival disease or orbital invasion.

Cystic Tumors

- Epidermal inclusion cysts
- Hidrocystoma
  - Apocrine, Eccrine, Trichilemmal



Epidermal Inclusion Cyst

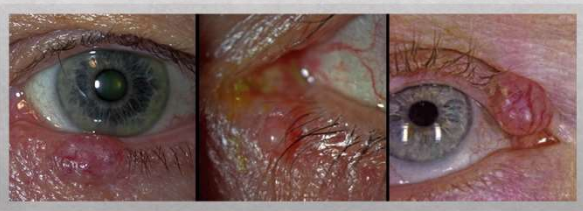
- Second most common benign lesion. Well-circumscribed white or yellow dome-shaped nodule. They are typically mobile and slow growing. They can appear at any age, but rarely before puberty. They occur when the follicular infundibulum is disrupted.
- The cyst is made of keratin and located just below the surface of the skin. They are often asymptomatic.
- Usually they occur at random, but if multiple are present, it could be associated with Gardner Syndrome, Gorlin Syndrome, or Favre-Racouchot. They can arise from prior trauma.
- Treatment: they can be drained or removed by excision. Make excision with the direction of the skin folds and squeeze out.

Hidrocystoma

- Very common, benign sweat gland lesions. Most often found as a solitary, pea-sized, translucent lesion that is usually in middle-aged or elderly patients.
- Apocrine hidrocystomas are usually solitary, larger (3 to 15mm) and vary in color (translucent to bluish-black).
- Eccrine hidrocystomas can be solitary or multiple, smaller (1 to 3mm) and flesh colored.
- Treatment: needle puncture, excision, incision and drainage or topical creams such as topical atropine, topical scopolamine or trichloroacetic acid.
- If anterior to the eyelid, but growing posterior, refer out.

Sweat Gland Tumors

- Syringoma
- Eccrine Spiradenoma
- Pleomorphic adenoma
- Sweat gland adenocarcinomas



Sweat Gland Adenocarcinomas

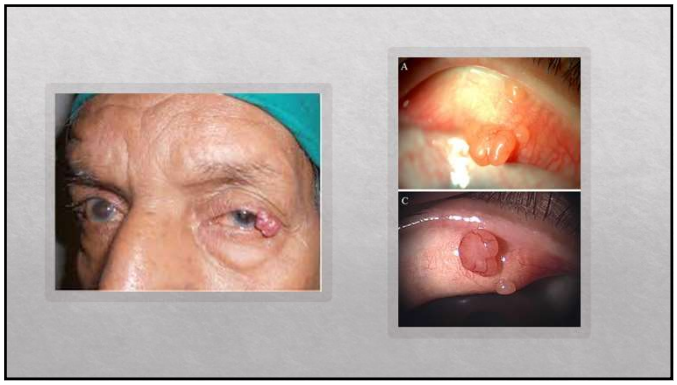
- Extremely rare malignant tumor that can be apocrine or eccrine in origin.
- They can appear in the orbit as well, so pay close attention to the development.
- The most common type is mucin producing and it is most often a low-grade malignancy.
- Treatment: excision while removing heathy tissue as well to confirm clear margins. This leads to high concerns for the function of the lacrimal system as well as cosmesis.

Pleomorphic Adenoma

- Rare tumors typically arising in the lacrimal or salivary glands. They are slow growing, smooth and painless lesions. They are typically unilateral.
- Very hard to differentiate from other subcutaneous lesions.
- Treatment: complete excision.

Syringoma

- Small, firm bumps (1 to 3mm) that typically form on the lower eyelids or upper cheeks and are usually in clusters. They resemble small pimples. They can be yellow, translucent or flesh colored.
- These bumps are harmless and are just an overgrowth of the sweat (eccrine) glands.
- Treatment: trichloroacetic acid (shrivel and fall off), laser removal or electric cauterization.

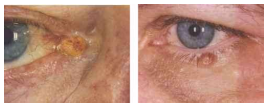


Eccrine Spiradenoma

- Benign, nodular tumor that arises from eccrine glands. These tumors rarely involve the eyelids, but when they do, they are usually painful.
- They are mostly seen as single tumors but can rarely appear as multiple nodules in a linear pattern.
- Treatment: complete excision.

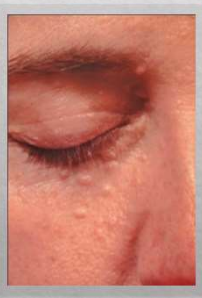
Sebaceous Gland Tumors

- Sebaceous gland hyperplasia
- Sebaceous gland adenoma
- Sebaceous gland carcinoma



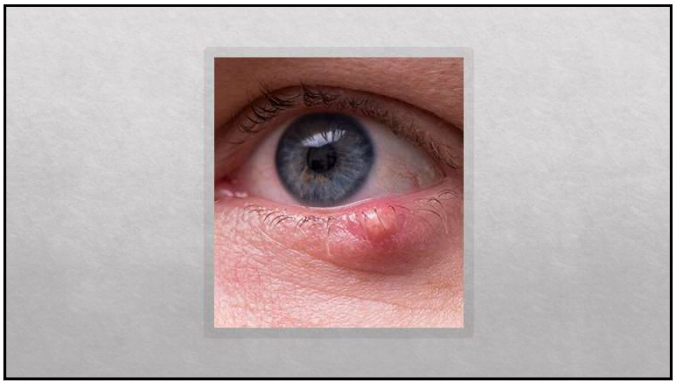
Sebaceous Gland Adenoma

- Smooth, firm, dome-shaped lesion (~0.5cm) that slowly gets larger. They are typically yellowish, but can be pink or red. The lesions can also have telangiectasia.
- They are composed of multiple sebaceous lobules and are usually single lesions but can appear as multiples in elderly patients.
- They can occasionally have an umbilicated center.
- Treatment: surgical removal if increase in size. Complete excision with clear margins.



Sebaceous Gland Hyperplasia

- Small, yellowish to cream colored lesions. If viewed under the microscope, you will notice that they have a central depression.
- These lesions are an overgrowth of sebaceous glands, and their growth is associated with sun and exposures of androgen hormones. The number of lesions can also increase over time.
- Treatment: excision, laser therapy, cauterization, electrodessication or photodynamic therapy.

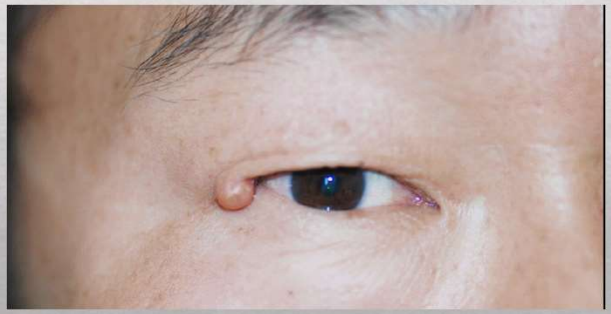


Sebaceous Gland Carcinoma

- Deep, firm, yellowish lump on the eyelid that is usually slow growing and painless. It can also appear as a yellow or red crust on the lid, where the lashes meet the lid. It can vary in its appearance, such as a bleeding lesion, bump on the lid that is not healing or healing then returning.
- If the cancer progresses, you will notice growths on the upper and lower eyelid that could seep fluid. It will often cause madarosis and can affect vision if the cancer spreads.
- These can be easily mistaken for a hordeolum or chalazion.
- Treatment: Biopsy

Stromal Tissue Tumors

- Fibrous tissue tumors
  - Rare to find on the eyelids.
- Fibrohistiocytic tumors
  - Xanthelasma
  - Juvenile xanthogranuloma
  - Necrobiotic xanthogranuloma
  - Fibrous histiocytoma

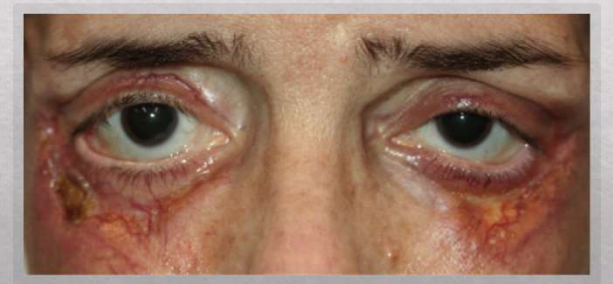


Fibrous Histiocytoma

- Solid mass that is covered by intact skin. Rare lesions of the eyelid that can be benign or malignant. They can be superficial or deep in the tarsus.
- Malignant lesions have high miotic activity or pleomorphism.
- Treatment: excision biopsy

Xanthelasma

- Soft or semi-solid, yellow plaques of lipid macrophages that are most commonly on the upper eyelids and usually bilateral.
- Patients that are 40 years or younger, they should have a cholesterol and lipid eval done.
- Treatment: excision or radiofrequency, but high likelihood of recurrence.



Necrobiotic Xanthogranuloma

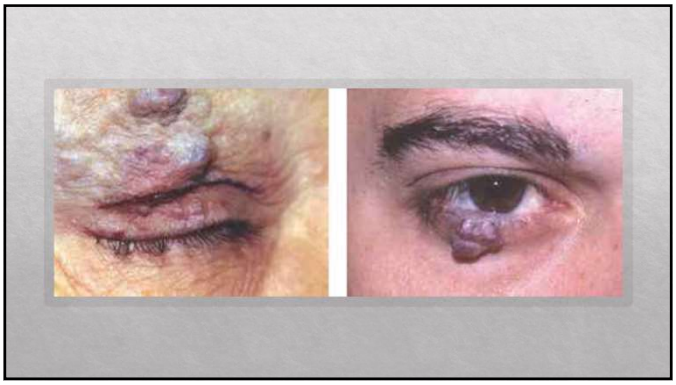
- Painless, firm, yellowish plaques or nodules that are typically in the periorbital region and have the tendency to lead to ulceration. There can also be telangiectasia and scarring.
- Collagen necrobiosis surrounded by inflammatory cells.
- Half of the patients will develop a hematologic disorder prior to onset, whereas 77-84% will develop it after onset.
- Treatment: Corticosteroids, intravenous immunoglobulin, laser treatment, radiotherapy or excision (not usually indicated due to high recurrence rate).

Juvenile Xanthogranuloma

- Solitary cutaneous lesion that is non-neoplastic and typically starts in infancy. It doesn't usually affect the eyelid., but instead affects the iris.
- Usually elevated reddish-brown round, firm nodule.
- Most common non-langerhans histiocytosis affecting the skin.
- Treatment: excision biopsy

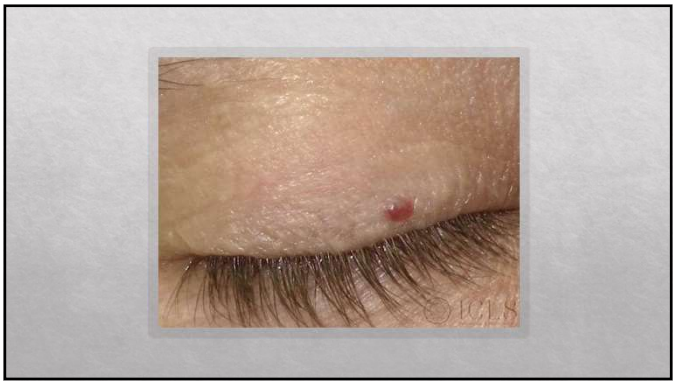
Vascular Tumors

- Capillary hemangioma
- Nevus flammeus
- Cavernous hemangioma
- Kaposi's sarcoma
- Pyogenic granuloma
- Cherry haemangioma



Cavernous Hemangioma

- It is a hamartoma. Dark blue, superficial, lobular lesion that will increase in size over time. It is very rare to appear on the eyelids, but mostly seen in adults.
- Made of disorganized tissue and cells. It is found in deeper layers of the skin around the eyelids.
- Large lesions can lead to ptosis, which can lead to amblyopia if vision is obstructed or compression causing astigmatism.
- Treatment: excision for cosmetic reasons or if there is a possibility of amblyopia.



Cherry Haemangioma

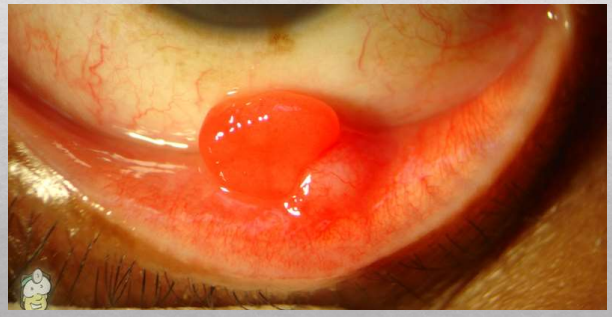
- Common, benign red skin growth (0.5-5mm) that are usually related to age. Typically arise at age 30 or older. They can be caused due to hormonal changes such as puberty or pregnancy.
- Not usually concerning unless the size, shape or color changes or it bleeds.
- Treatment: typically, just observed. Excision can be done for cosmetic reasons.

Capillary Hemangioma

- Benign tumor consisting of abnormal growth of tiny blood vessels. Typically appear around birth to 6 months of age.
- They occur in the outer layers of the skin. It can lead to amblyopia (pressing on the eye) or even glaucoma (pressing on the optic nerve).
- They generally resolve on their own, 90% are gone by age 9.
- Treatment:oral propranolol, steroids to stop progression (oral or injection), or excision if necessary.

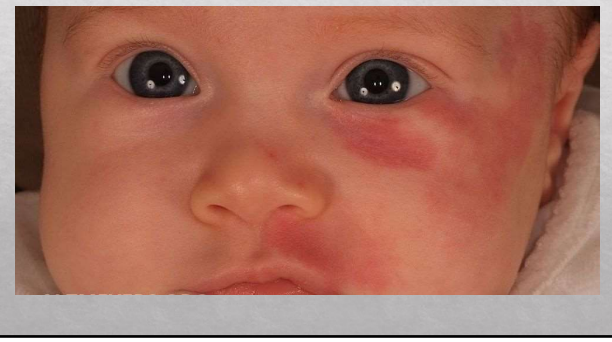
Kaposi's Sarcoma

- It can be a bluish-purple tumor on the eyelid or a pinkish-red conjunctival tumor.
- It can occur in elderly or immunocompromised patients, but mostly found in HIV/AIDS patients. Therefore, patients with these tumors and no known underlying condition should have blood work done.
- Treatment: excision biopsy for diagnosis. Chemotherapy, radiation and biological therapy if needed.



Pyogenic Granuloma

- Benign red, fleshy, vascular mass that can cause mild discomfort to patients, but are not painful. They are usually sessile or pedunculated and can be 1-10mm.
- They can occur on the skin or the palpebral conjunctiva. They are not infectious or inflammatory and the etiology is unknown. They are more susceptible to bleed due to their vascularization.
- Treatment: they typically do not resolve on their own. Topical corticosteroids QID for 1-2 weeks can reduce the size. Excision could be necessary if it persists.

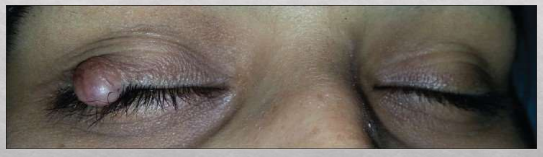


Nevus Flammeus

- Capillary malformation made of mature telangiectatic vessels, also known as a port wine stain. Mostly seen at birth, disappearing within the first year. It does have the possibility to stay throughout life. It can be associated with other vascular hamartomas as in Sturge-Weber syndrome.
- Flat, deep red to purple lesion that can vary drastically in size.
- Treatment: Nd:YAG and pulsed dye laser therapy can lighten the lesions.

Neurogenic Tumors

- Plexiform Nerofibroma
- Solitary Neurofibroma
- Schwannoma
- Merkel Cell Tumor

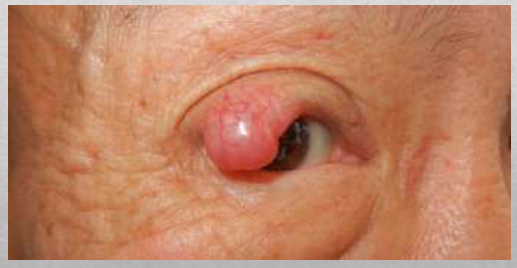


Schwannoma

- Rare benign tumor made up of proliferating Schwann cells of peripheral nerves. Typically smooth, firm, solitary and slow-growing. They can develop at any age and are usually asymptomatic.
- If multiple Schwannoma are present, it is usually indicative of neurofibromatois-2
- It is very often confused with an inclusion cyst or chalazion.
- Treatment: complete excision with clear margins to prevent recurrence.

Plexiform Nerofibroma

- Infiltrative, multi-nodular lesions that grow along peripheral nerves. They are usually poorly circumscribed and present as soft nodules in the dermis.They usually present early in life.
- They have a “bag-of-worms” consistency and typically produce a S-shaped deformity of the eyelid.
- They are the most common subtype in the orbit and are associated with Neurofibromatosis-1. Roughly 20% of the ones associated with NF1 become malignant.
- Treatment: subtotal resection and recurrence is common.
- They are difficult to remove due to the vascularity and unclear margins.



Merkel Cell Tumor

- Asymptomatic nodule that appears on sun-exposed skin of elderly, white patients. It is typically a painless, expanding tumor. Usually reddish with telangiectasia.
- It is a very rare, aggressive tumor where eyelid and periocular tumors only consist of about 2.5% of all Merkel cell carcinoma tumors.
- Treatment: excision with radiotherapy or chemo if needed for metastatic disease.

Solitary Neurofibroma

- Benign, pedunculated, soft, flaccid nodule that is asymptomatic. Usually between 2-20mm and flesh colored but can be pinkish or dark brown. It typically appears in the second to third decade of life.
- This type of neurofibroma on the eyelid is very rare, but the only concern is cosmetic.
- Treatment: excision if diagnosis is uncertain or for cosmetic reasons.

Inflammatory & Infectious Lesions

- Chalazion
- Hordeolum
- Molluscum Contagiosum
- Verruca Vulgaris

Molluscum Contagiosum

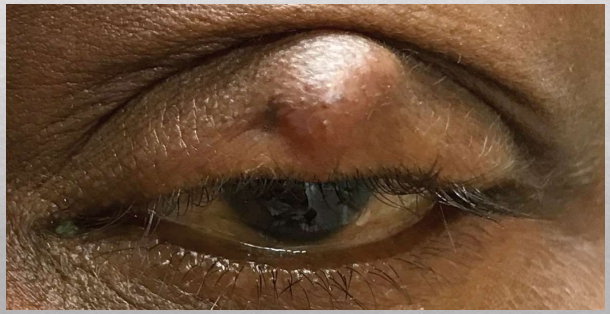
- Small waxy, nodular and umbilicated papules, that are typically along the brow area or along the eyelid margins. They are caused by the pox virus and are most often seen in children.
- It is a viral infection of the epidermis and can be more severe and larger in HIV patients.
- If located at the lid margin there is a high risk of toxic products being released by the lesion into the cul-de-sac, causing chronic follicular conjunctivitis and possible epithelial keratitis. If left untreated, can lead to sub-epithelial infiltration and vascularization.
- Treatment: superficial excision, cauterization, or cryotherapy. Once lesions are removed, conjunctivitis and/or keratitis will resolve. Patients who are HIV-positive are more susceptible to recurrence.

Hordeolum

- Focal, acute infection that is within the meibomian gland (internal hordeolum) or gland of Zeis (external hordeolum).
- Most commonly cause by staphylococcus species and can transform into preseptal cellulitis.
- Treatment: heat mask with massage for 10 minutes b.i.d-q.i.d, topical antibiotic with a draining lesion or blepharitis, and systemic antibiotic if necessary.
  - Doxycycline 100 mg PO b.i.d, augmentin 500 mg PO b.i.d, bactrim 800 PO b.i.d (if suspicious for preseptal)

Verruca Vulgaris

- A flesh-colored lesion that is circumscribed, elevated hyperkeratotic lesion that has fingerlike projections. It is a very common lesion of school aged children and is easily spread by skin-to-skin transmission,
- It is caused by the wart virus, which is the papova group of the DNA viruses. It resides in the epidermis and there is no root or “mother wart.”
- Treatment: Radiofrequency therapy. They do have the opportunity to spontaneously resolve, except in immune compromised patients.

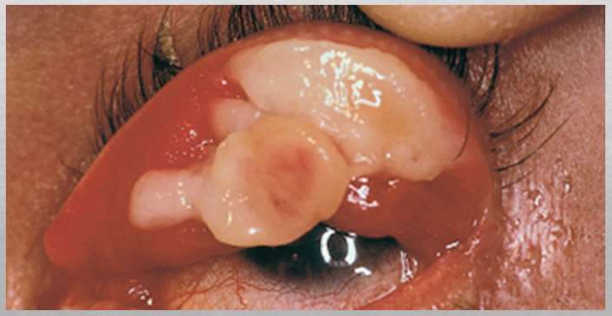


Chalazion

- A nodule formed due to chronic inflammation secondary to the obstruction of a meibomian gland or gland of Zeis.
- Treatment: heat mask with massage b.i.d-q.i.d. If present >6 months- incision and curettage is more than 90% effective. Kenalog injections are an option, but typically requires two injections in 2-6 weeks and is 75-90% effective. It is important to note that kenalog should not be used on darker pigmented skin due to the risk of lightening the skin.
- Recurrent lesions should be examined closely for possible malignancy, due to suspicion for sebaceous cell carcinoma.

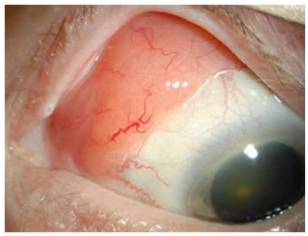
Milia

- Tiny white bumps most commonly on infants but can develop at any age.
- They are old skin cells that becomes trapped in small pockets near the surface of the skin. They are made of keratin.
- Treatment: usually resolve spontaneously, but cryotherapy if not. For infants- wash daily with warm water.



Ligneous Conjunctivitis

- Very rare, chronic and recurrent pseudomembranous and membranous conjunctivitis.
- Potentially sight/life threatening systemic disorder where patients exhibit abnormal healing of mucosal tissue. It is fibrin-rich “wood-like” lesion that forms.
- Treatment: removal of lesions, usually with steroid coverage and plasminogen (used to soften he lesion).



Conjunctival Lymphoma

- Salmon- pink patch that painlessly enlarges over time. Most common location is inferior fornix. Typically seen in the 5th to 7th decade of life.
- Typically, a primary neoplasm, but 10-30% are secondary tumors.
- Treatment: excision biopsy to be completely excised.
- Referral to oncologist for systemic eval

Lesion Removal

- Papilloma removal
- Sudoriferous cyst/Hidrocystomas
- Xanthelasma
- Seborric keratosis
- Chalazion removal

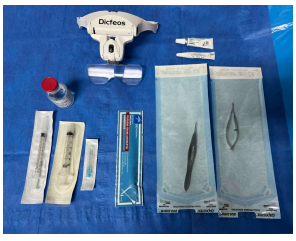
Papilloma Removal

- Sign consent forms and take Pre-op photo.
- Take a betadine swap to the lesion and surrounding area in a circular motion (working inside to outside).
- Inject around 0.3-0.4 mL of anesthetic just beneath the lesion using half to one inch syringe with 25–27-gauge needle.
- Once numb, pull the lesion away from the skin using Adson tissue forceps. This will allow for a good view to the base of the lesion. Then, cut the lesion at the base using Westcott scissors.
- Store lesion in specimen cup to be sent off for a biopsy.
- Apply antibiotic ointment to affected area.
- Typically, there is minimal blood, but, if necessary, cauterization can be used to stop the bleeding.

Papilloma Removal

- Post- op instructions: Use antibiotic ointment to affected area BID. Return to clinic in 2 weeks for a recheck.
- Take post-op photos.
- There is a chance of recurrence, and the lesion can just be removed once again.
- Make sure to document appropriately!

Equipment Needed For Lesion Removal



Equipment Needed For Lesion Removal



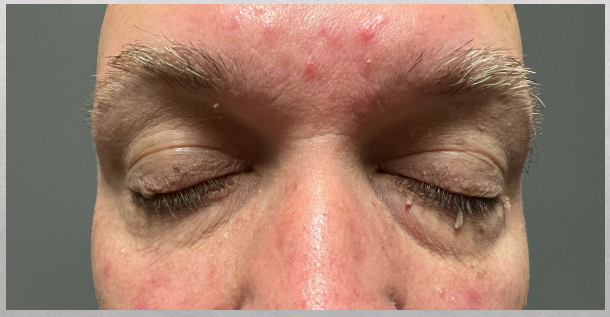
Epinephrine contraindications

- Open contaminated wounds
- Can interact with several mediations: MAOS inhibitors, tricyclic antidepressants, beta blockers, hypoglycemics/insulin, oxytocics, thyroid hormones.
- Patients with sulfite sensitivities
- Patients with coronary insufficiency, angle closure glaucoma, peripheral vascular disease.

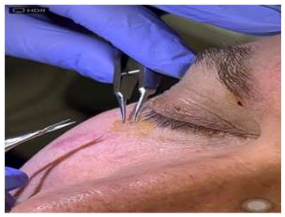
Equipment Needed For Lesion Removal

Papilloma Removal Video

- https://www.youtube.com/watch?v=IZ48rpnAe14



Papilloma Removal



Radiofrequency Surgery

- High frequency radio waves used to tissue to cut, coagulate or destroy tissue.
- Very successful way to remove skin lesions with minimal scarring.
- Less pain, swelling, bleeding and minimizes infection.
- Contraindications: patients with pacemaker or defibrillator or if the patient is pregnant.
- It is not recommended in dark pigmented patients due to the potential of overgrown scars or discolored skin after the procedure.

Radiofrequency Surgery

- There are several different tips available to allow you to tailor the procedure based on the lesion size and type needing removed.
- There are 4 waveform settings:
  - I- pure cutting action: 90/10 (cut/coag)
  - II-blended: 50/50 (cut/coag)
  - III-Coagulation/Hemostasis: 90/10 m (cut/coag)
  - IV-Fulguration: coagulation and destruction

Radiofrequency Surgery

- Papillomas or skin tags
  - Remove lesion at the base using thin wire loop. Mode 1 @ 3-5
- Xanthalelasma
  - Start at the borders and sweep over the lesion while tapping until the lesion is flat. Use the ball or broad tip, Mode 3 @ 1-3.
- Seborrheic keratosis
  - Removed the same as xanthalelasma.
- Molluscum Contagiosum, Syringioma & Hemangioma
  - Place probe in the center of lesion, tap foot pedal and release immediately. Use ball or pin tip, Mode 3 @1-3.

Radiofrequency Surgery

- Sebaceous cysts
- Pyogenic granuloma
- Verruca vulgaris

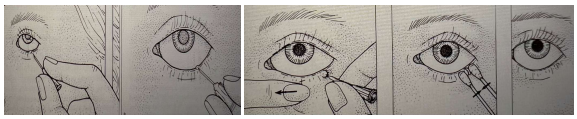
Radiofrequency Video

- https://www.youtube.com/watch?v=1RdPbP82vVw
- https://www.youtube.com/watch?v=X7oQjJFAPVk

Cyst Removal

- Sebaceous & sudoriferous cyst removal
- Sign consent forms and take Pre-op photo.
- Take a betadine swap to the lesion and surrounding area in a circular motion (working inside to outside).
- Inject around 0.3-0.4 mL of anesthetic just beneath the lesion using half to one inch syringe with 25–27-gauge needle.
- Lance with 27–30-gauge needle or scalpel and drain.
- Same post-op instructions as papilloma removal.

Cyst Removal

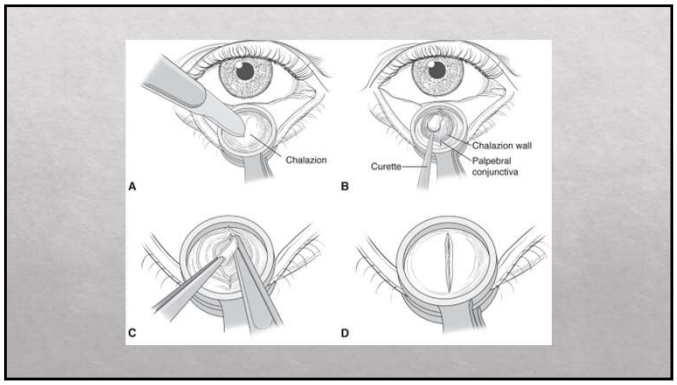


Cyst Removal Video

- https://www.youtube.com/watch?v=Carl4c930zk

Chalazion Removal

- After attempting conservative care of heat masks for 3-6 months, surgical intervention can be done.
- Incision and curettage is more than 90% effective at removing a chalazion.
- Reasons to not preform incision and curettage would be if the lesion is medially near the punctum or if they patient has an allergy to local anesthetic.



Chalazion Removal

- To begin you will need to inject local anesthesia.
- Place chalazion clamp just tight enough to not slip, but not be painful and evert the lid.
- Create a vertical incision with a scalpel and stopping 2-3mm away from the lid margin.
- Incision can also be made with radiofrequency using the thin wire tip (mode 1 or 2 @3-5) as you would if it was a scalpel.
- Use curette to remove the internal contents.
- Remove fibrotic capsule using forceps and Westcott scissors to ensure that it doesn't return.

Chalazion Removal

- Post- op instructions: Use antibiotic ointment to affected area BID-QID and resume hot compresses at 1 week. Return to clinic in 2 weeks for a recheck.
- Take post-op photos.
- There is a chance of recurrence, and the lesion can just be removed once again.
- Make sure to document appropriately!

Chalazion video

- https://www.youtube.com/watch?v=4W0dO3b-M7U

Thank You!