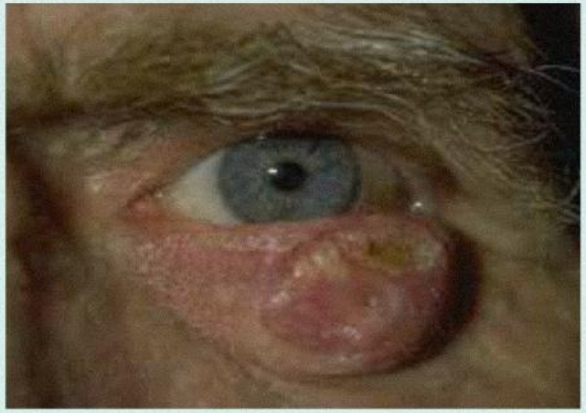
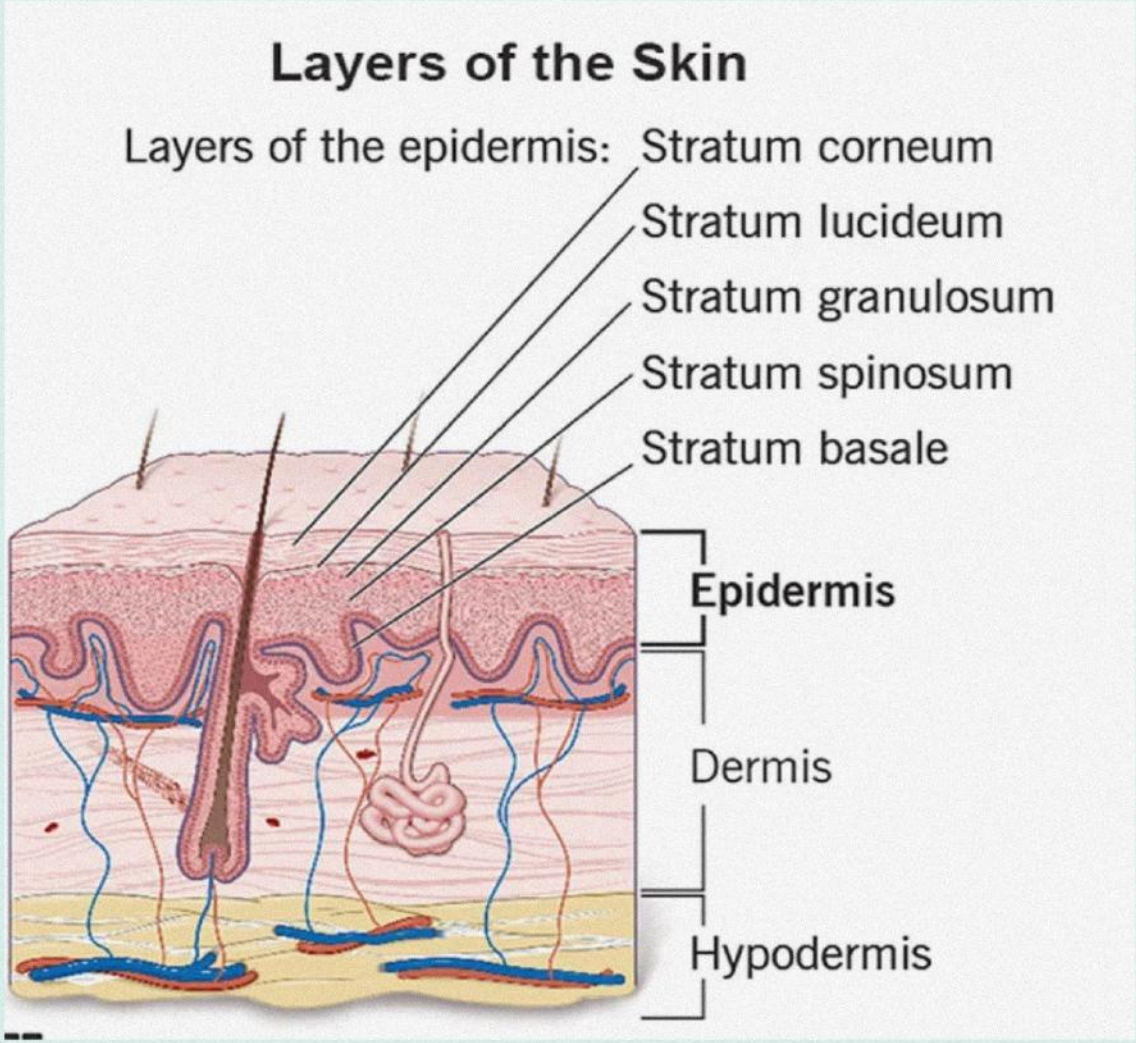
EYELID TUMORS

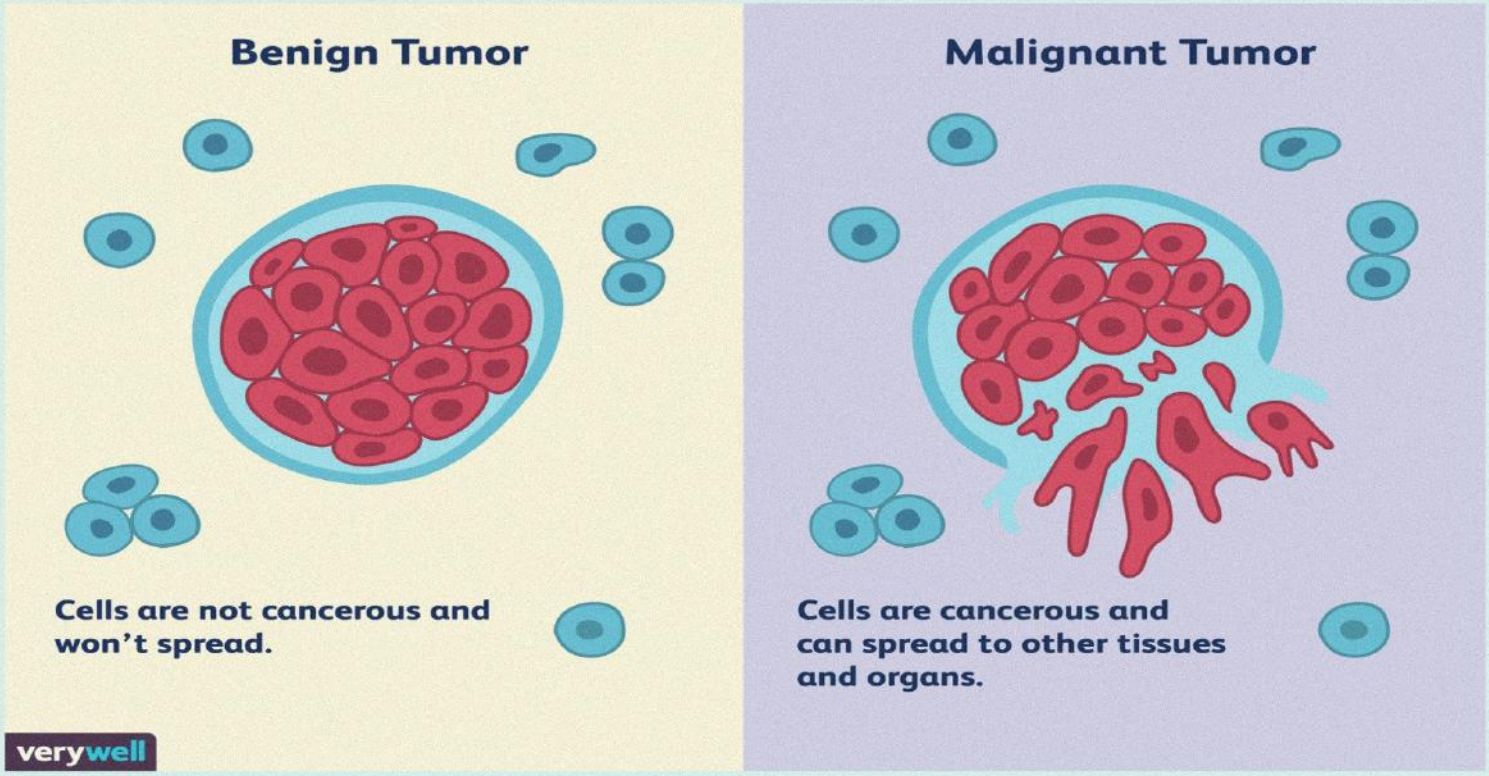


Prof Sofialqbal
FRCS, MRCOphth
Fellowship Orbit/Oculoplastics
Fellowship Refractive surgery

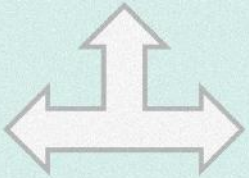
Layers of the Skin



- ***A swelling of a part of a body generally without inflammation resulting in an abnormal growth of tissue***



Classification



BENIGN

- NODULES
- CYSTS
- TUMORS

MALIGNANT

BENIGN

NODULES

- CHALAZION
- HORDEOLUM
- XANTHELASMA
- MOLLUSCUM CONTAGIOSUM

CYSTS

- HIDROCYSTOMA
- SEBACEOUS CYST
- CYST OF ZIESS
- CYST OF MOLL

TUMORS

- KERATOACANTHOMA
- CAPILLARY HEMANGIOMA
- PORT WINE STAIN
- CUTANEOUS HORN
- PYOGENIC GRANULOMA
- VIRAL WART

Benign tumors

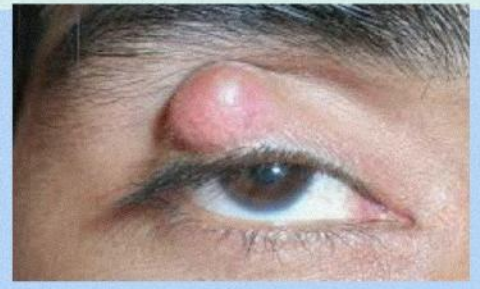
- Epithelial tumors
- Melanocytic tumors
- Adnexal cystic lesions
- Sweat gland origin
- Hair follicle origin
- Miscellaneous lesions

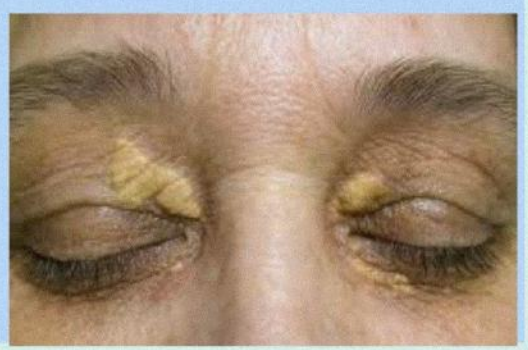
MALIGNANT

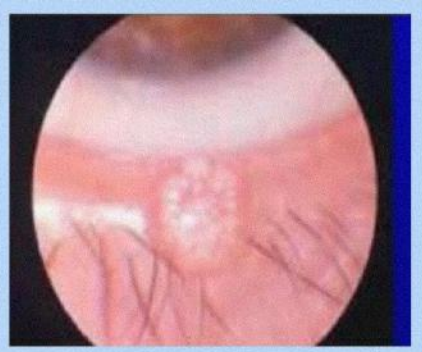
- Basal cell carcinoma
- Sebaceous gland carcinoma
- Melanoma
- Kaposi sarcoma
- Merkel cell carcinoma

NODULES

- *Chlazion*
- *Acute hordeolum*
- *Xanthelasma*
- *Molluscum contagiosum*

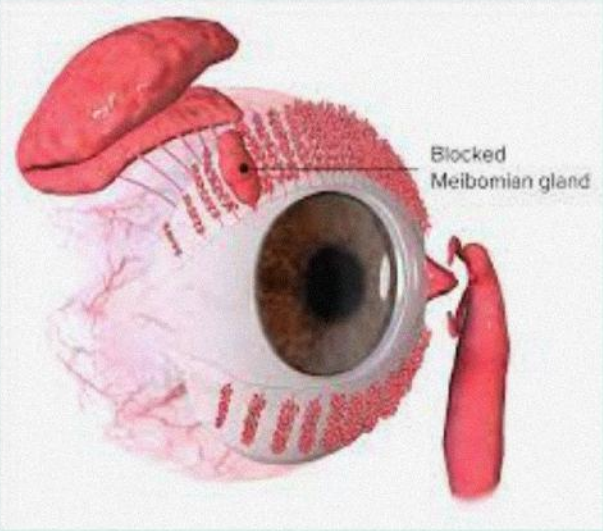






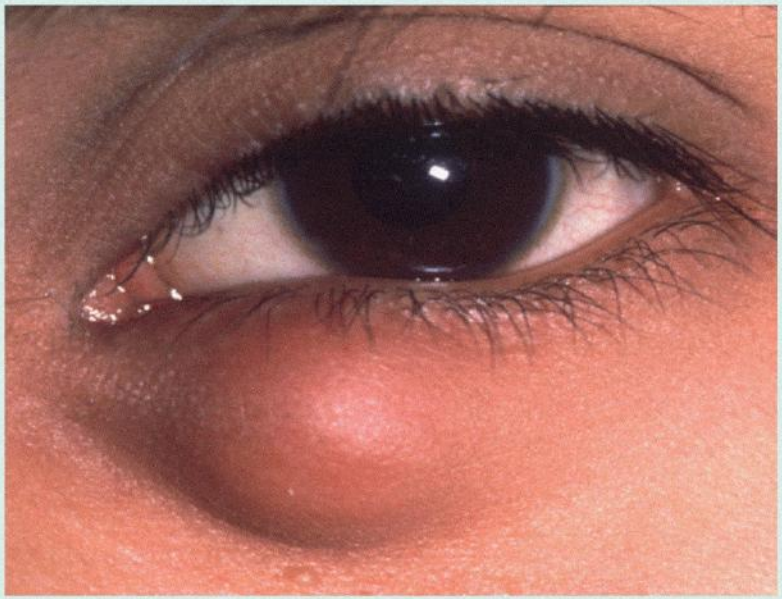
CHALAZION

- Chronic, sterile, lipogranulomatous inflammatory lesion caused by blockage of meibomian gland orifices and stagnation of sebaceous secretions
- Meibomian cyst
- Painless ,round nodule

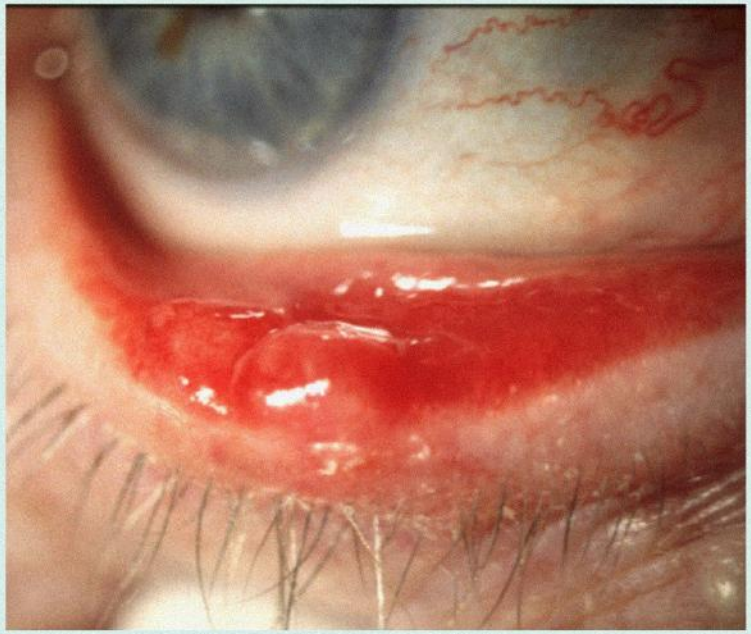


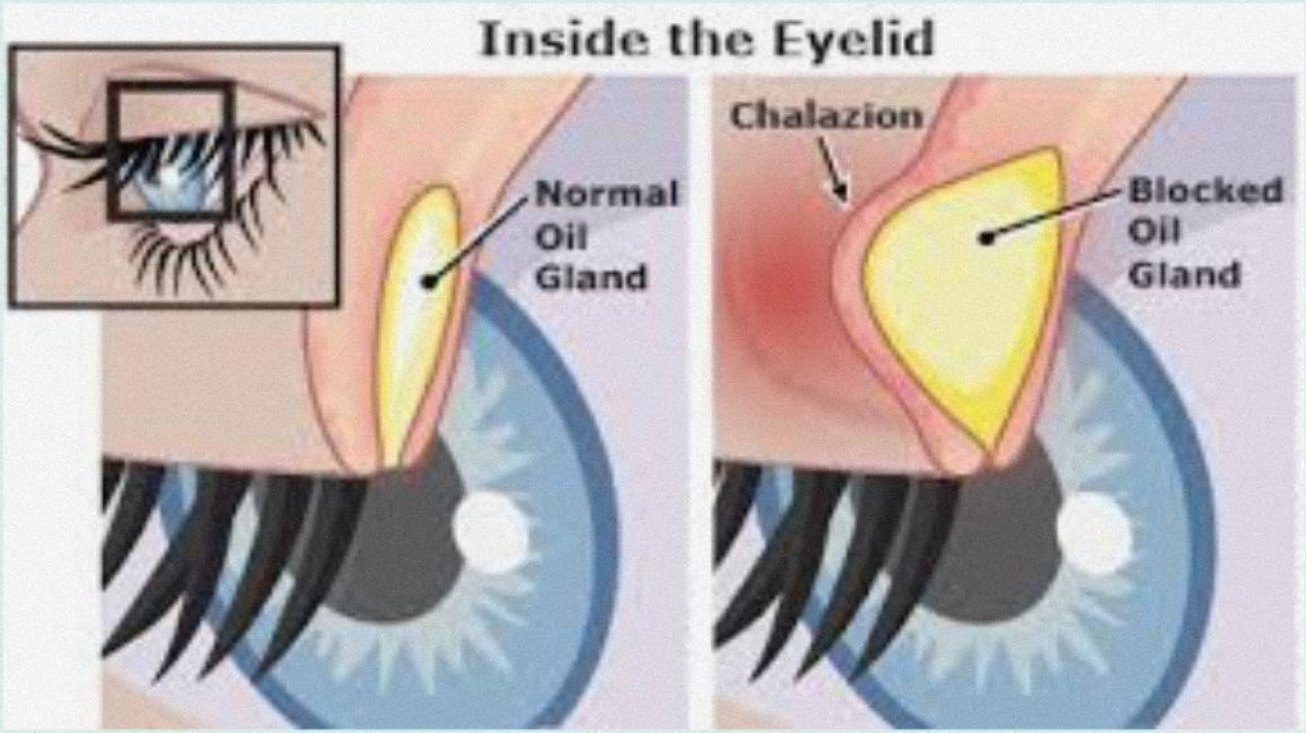
- May press on cornea and can cause astigmatism and blurred vision

Painles,firm roundish nodule within the tarsal plate

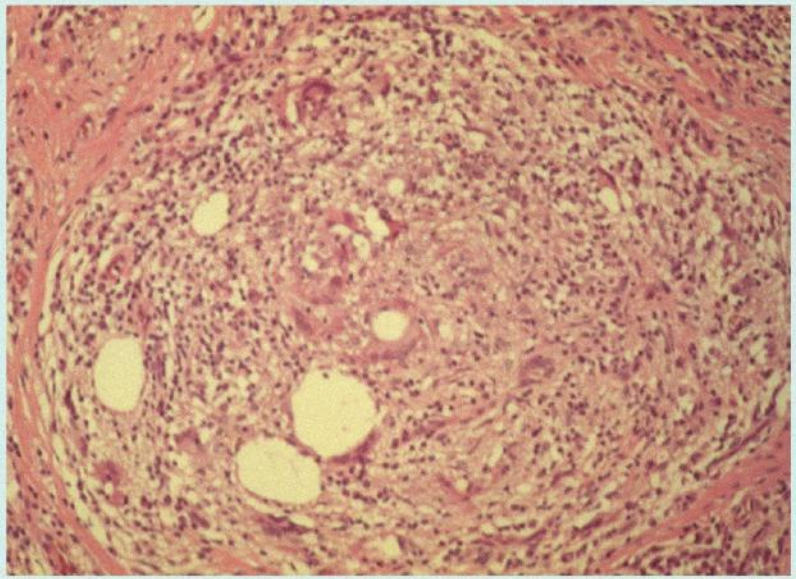


May rupture through the conjunctiva and cause granuloma

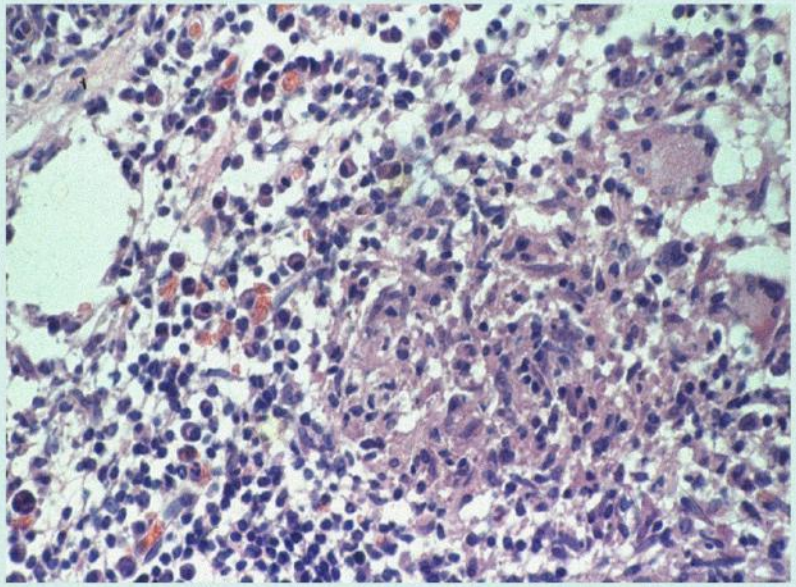




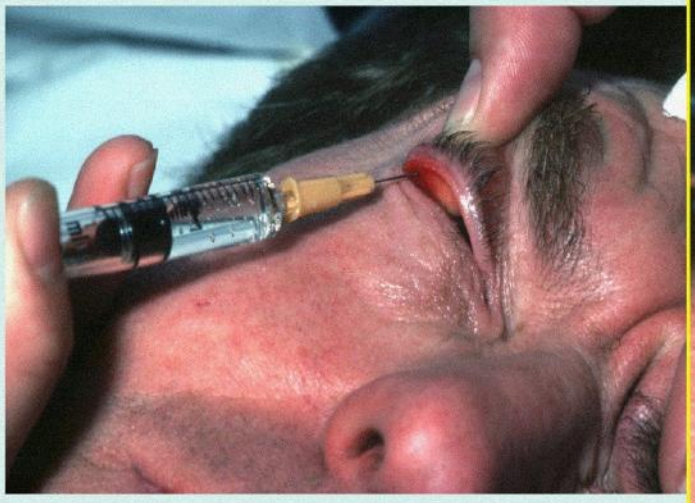
Multiple round spaces previously containing fat surrounded by granulomatous reaction



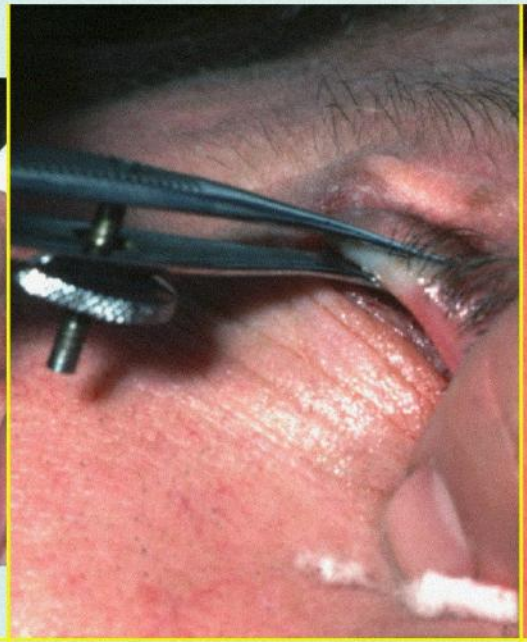
Epitheliod and multinucleate giant cells



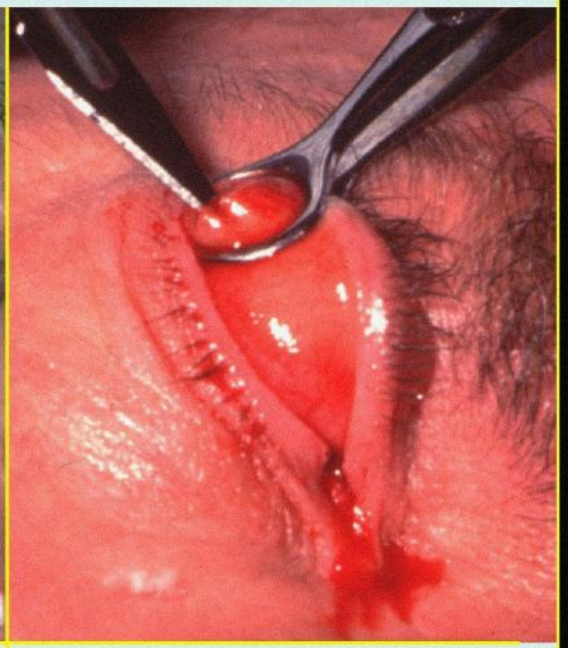
Treatment of chalazion



Injection of local anaesthetic



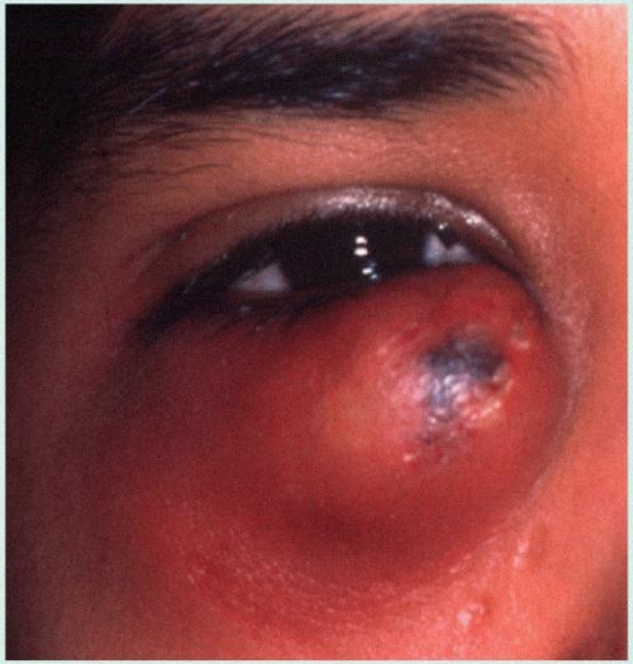
Insertion of clamp



Incision and curettage

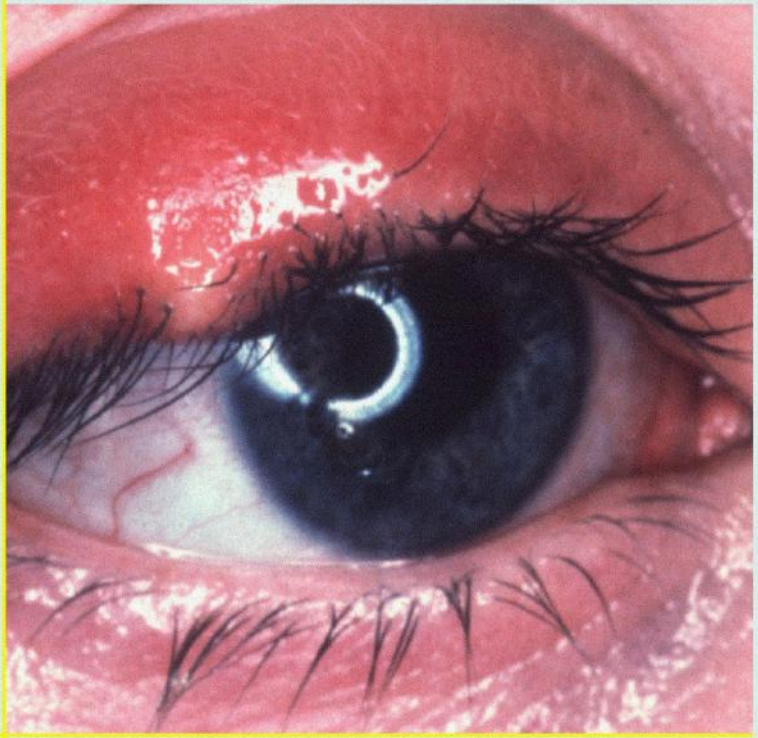
Acute hordeola

Internal hordeolum (acute chalazion)



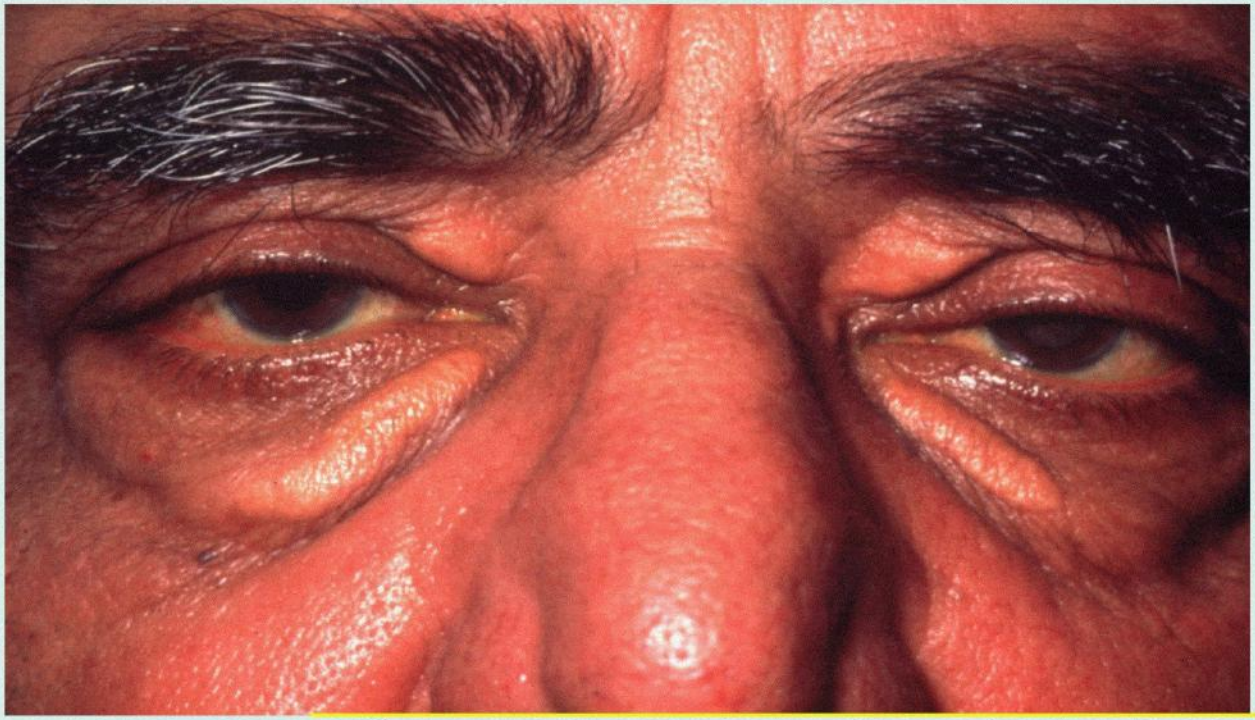
- *Staph.* abscess of meibomian glands
- Tender swelling within tarsal plate
- May discharge through skin or conjunctiva

External hordeolum (stye)



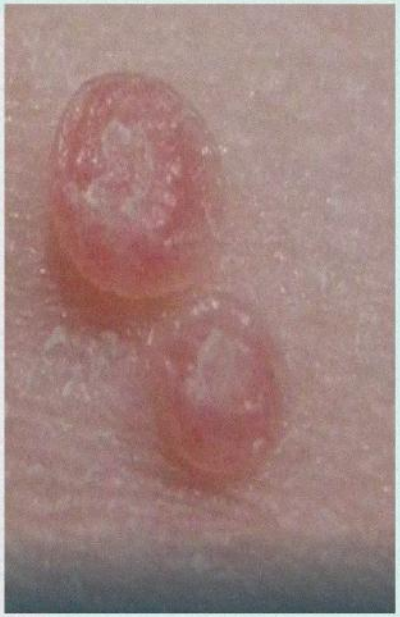
- *Staph.* abscess of lash follicle and associated gland of Zeis or Moll
- Tender swelling at lid margin
- May discharge through skin

Xanthelasma



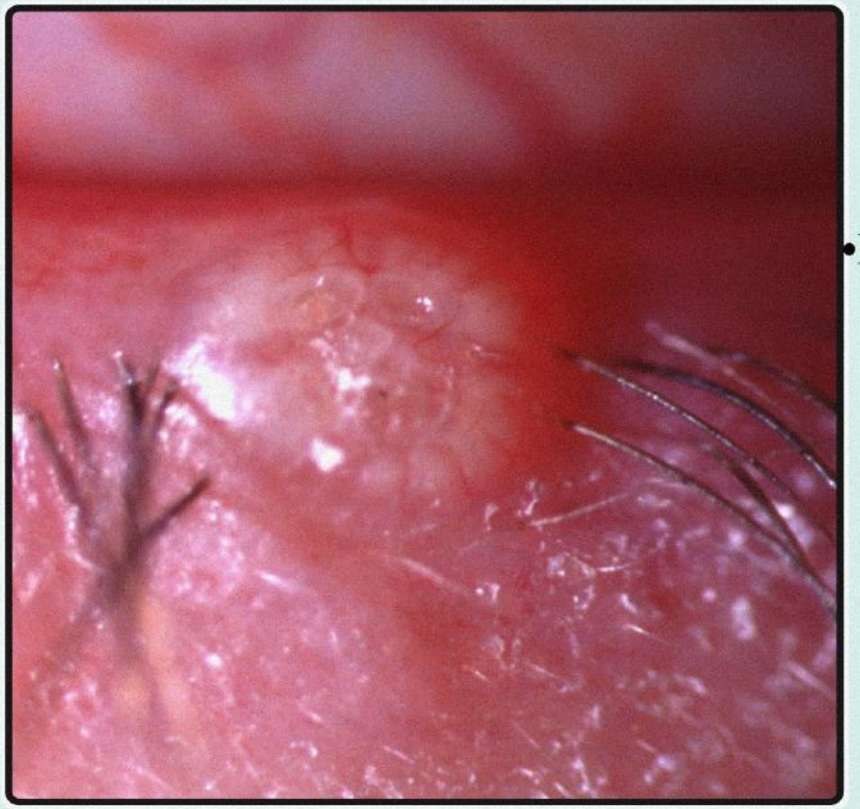
- Common in elderly or those with hypercholesterolaemia
- Yellowish, subcutaneous plaques containing cholesterol and lipid
- Usually bilateral and located medially

Molluscum contagiosum



It is caused by a DNA poxvirus called the molluscum contagiosum virus (MCV). MCV has no nonhuman-animal reservoir (infecting only humans). There are four types of MCV, MCV-1 to -4; MCV-1 is the most prevalent and MCV-2 is seen usually in adults. The virus that causes molluscum is spread from person to person by touching the affected skin. The virus may also be spread by touching a surface with the virus on it, such as a towel, clothing, or toys.

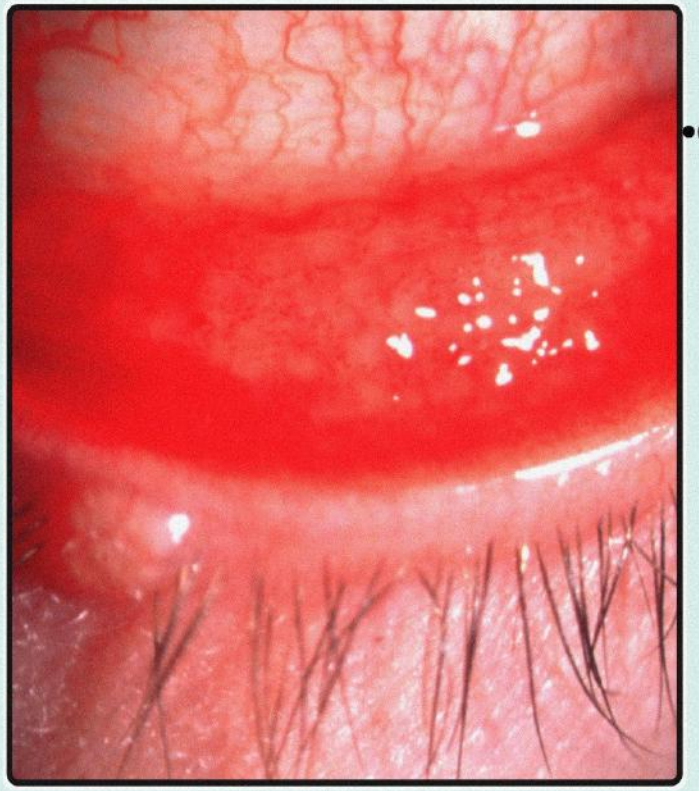
SIGNS



- **Painless, waxy, umbilicated nodule**

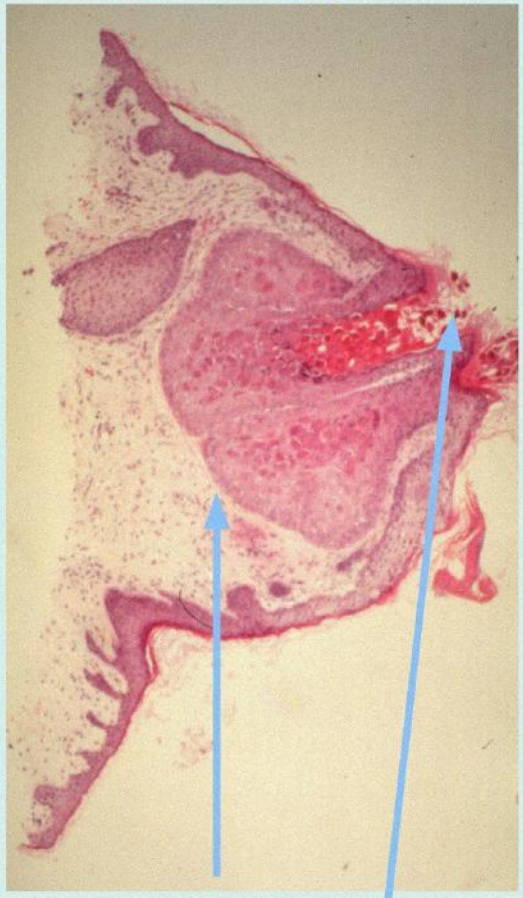
  May be multiple in AIDS patients

Complications

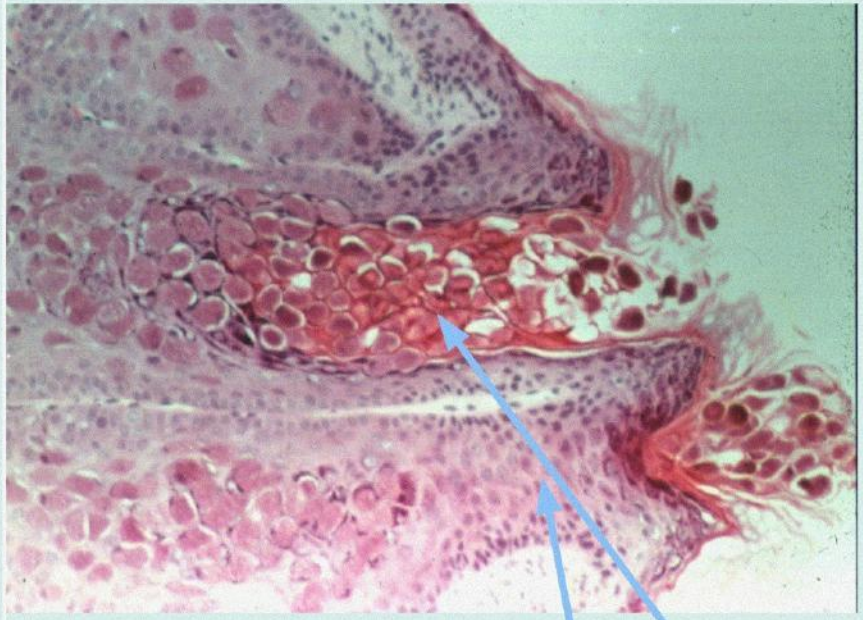


- Chronic follicular conjunctivitis
  - Occasionally superficial keratitis

Histology of molluscum contagiosum



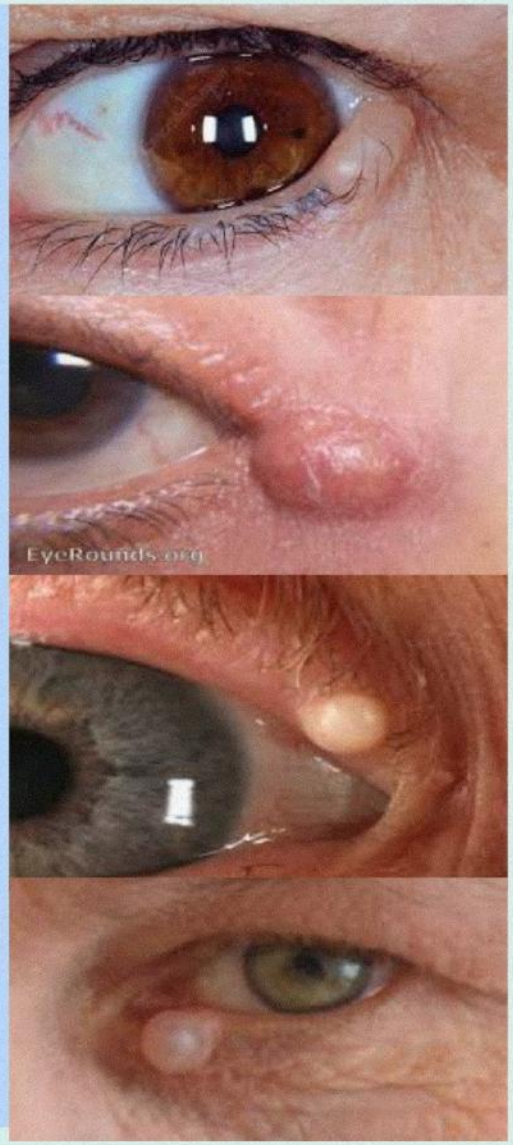
- Circumscribed lesion
- Surface covered by normal epithelium except in centre



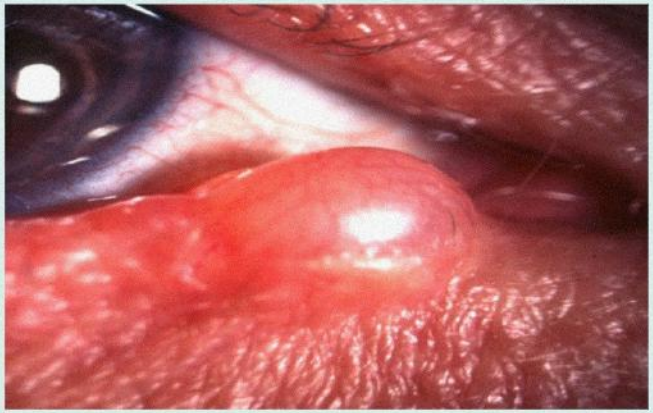
- Lobules of hyperplastic epithelium
- Intracytoplasmic (Henderson-Patterson) inclusion bodies
- Deep within lesion bodies are small and eosinophilic
- Near surface bodies are larger and basophilic

CYSTS

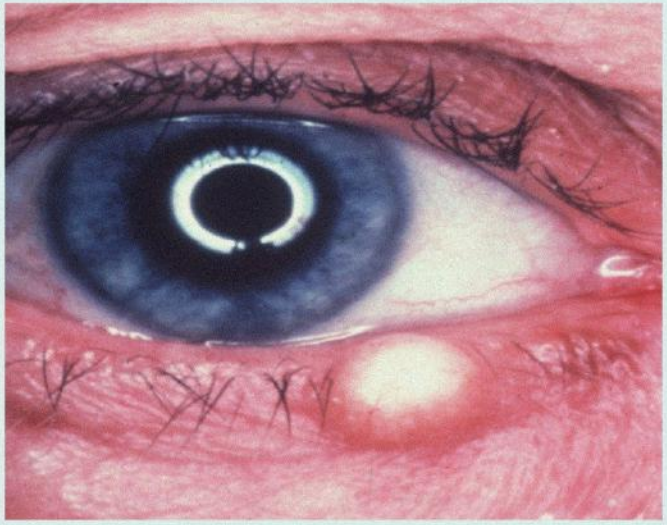
- *Hidrocystoma*
- *Sebaceous cyst*
- *Cyst of Zeiss*
- *Cyst of Moll*



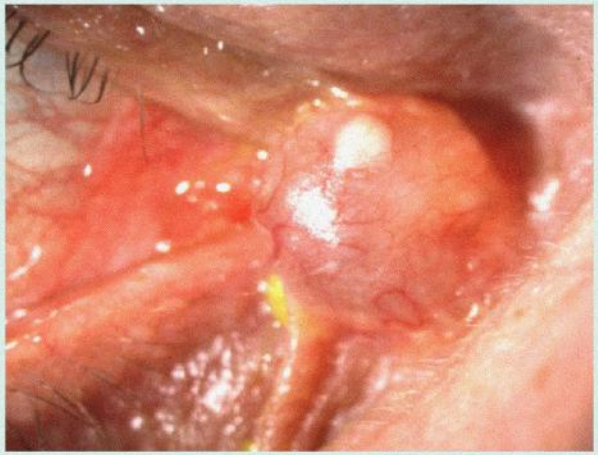
CYSTS

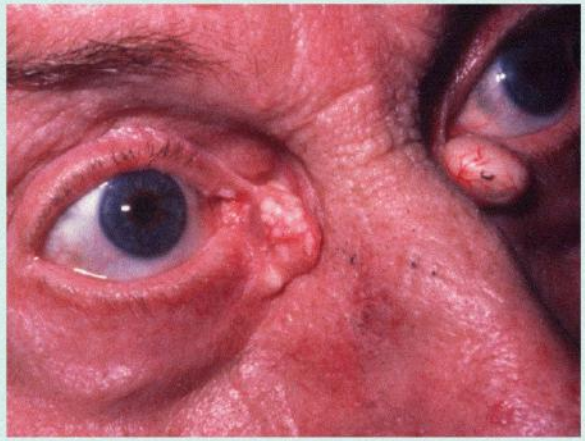


- **CYST OF MOLL**
- **Translucent**
- **On eyelid margin**



- **Cyst of Ziess**
- **Opaque**
- **On lid margins**





- ***ECCRINE SWEAT GLAND HIDROCYSTOMA***

- ***Similar to cyst of Moll***
- ***Not confined to lid margin***

SEBACEOUS CYST

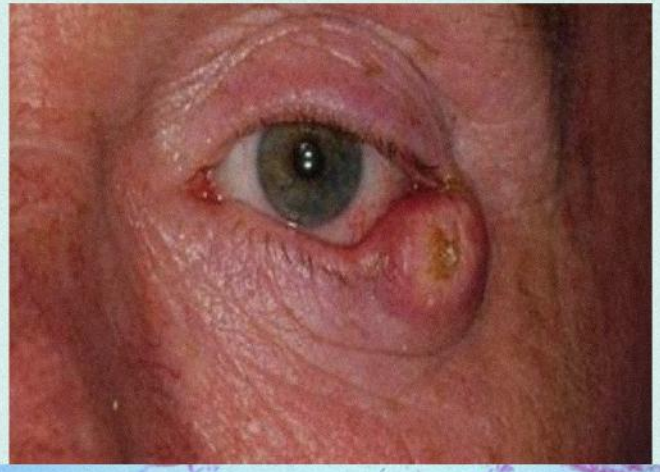
- ***Cheesy content***
- ***Often on inner canthus***

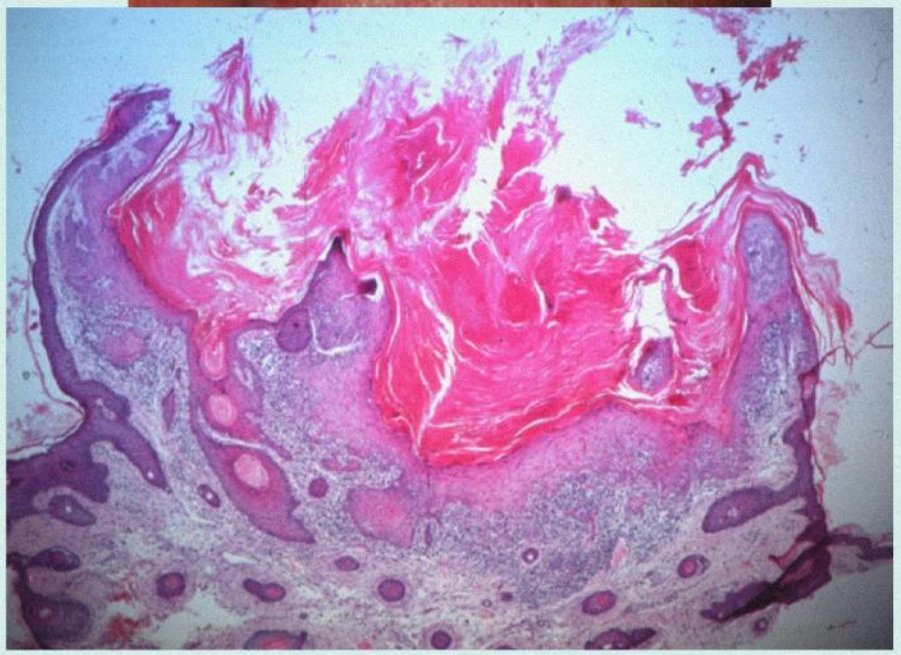
Tumours

- *Keratoacanthoma*
- *Capillary haemangioma*
- *Port wine stain*
- *Pyogenic granuloma*
- *Cutaneous horn*
- *Viral wart*

Keratoacanthoma

- Uncommon , fast growing nodule
- Involutes spontaneously with one year
- Rolled margins with a central keratin filled crater
- There may be underlying SCC





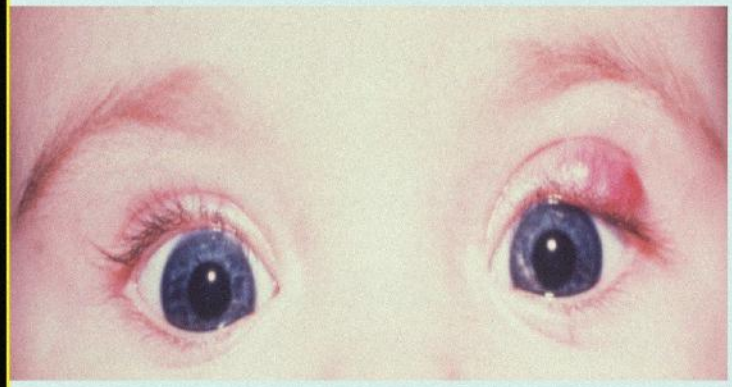
Hemangioma

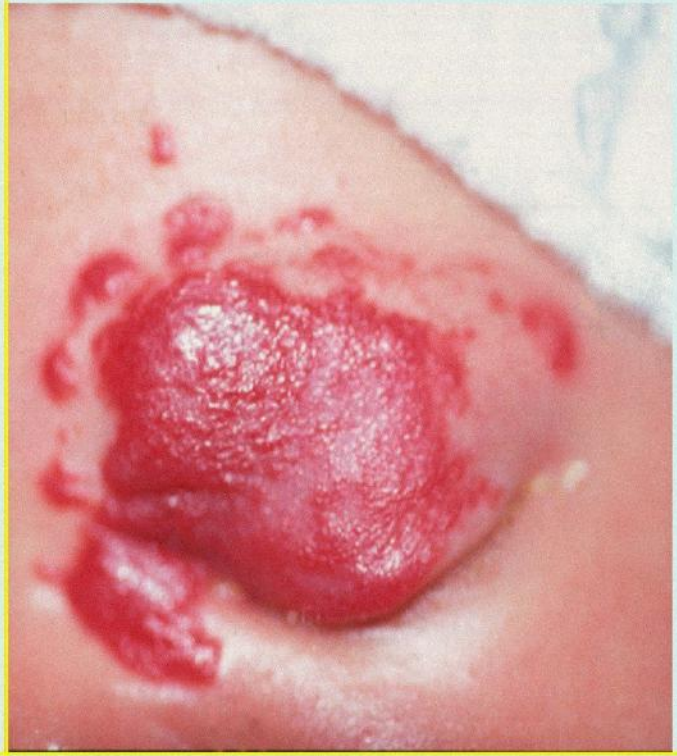
- The most common tumor of infancy and childhood (4-10%)
- 3-5 times more seen in girls
- More seen in premature infants (<1200 grams% 23)
- Not frequent in darker-skinned babies
- Usually occurs in first 2 weeks after birth
- Initially, a pale-colored, telangiectatic or macular red stain or purple-colored stain
- Single lesion in 80%, 20% more than one lesion
- In patients with more than one lesion accompanies other system hemangiomas (liver etc.)

Types

- **Central**
  - In bone
- **Capillary**
  - Intercommunication capillary vessels
    - Strawberry angioma
    - Port wine stain
    - Salmon's notch
- **Cavernous**
  - Dilated blood containing spaces lined by endothelium
- **Arterial**

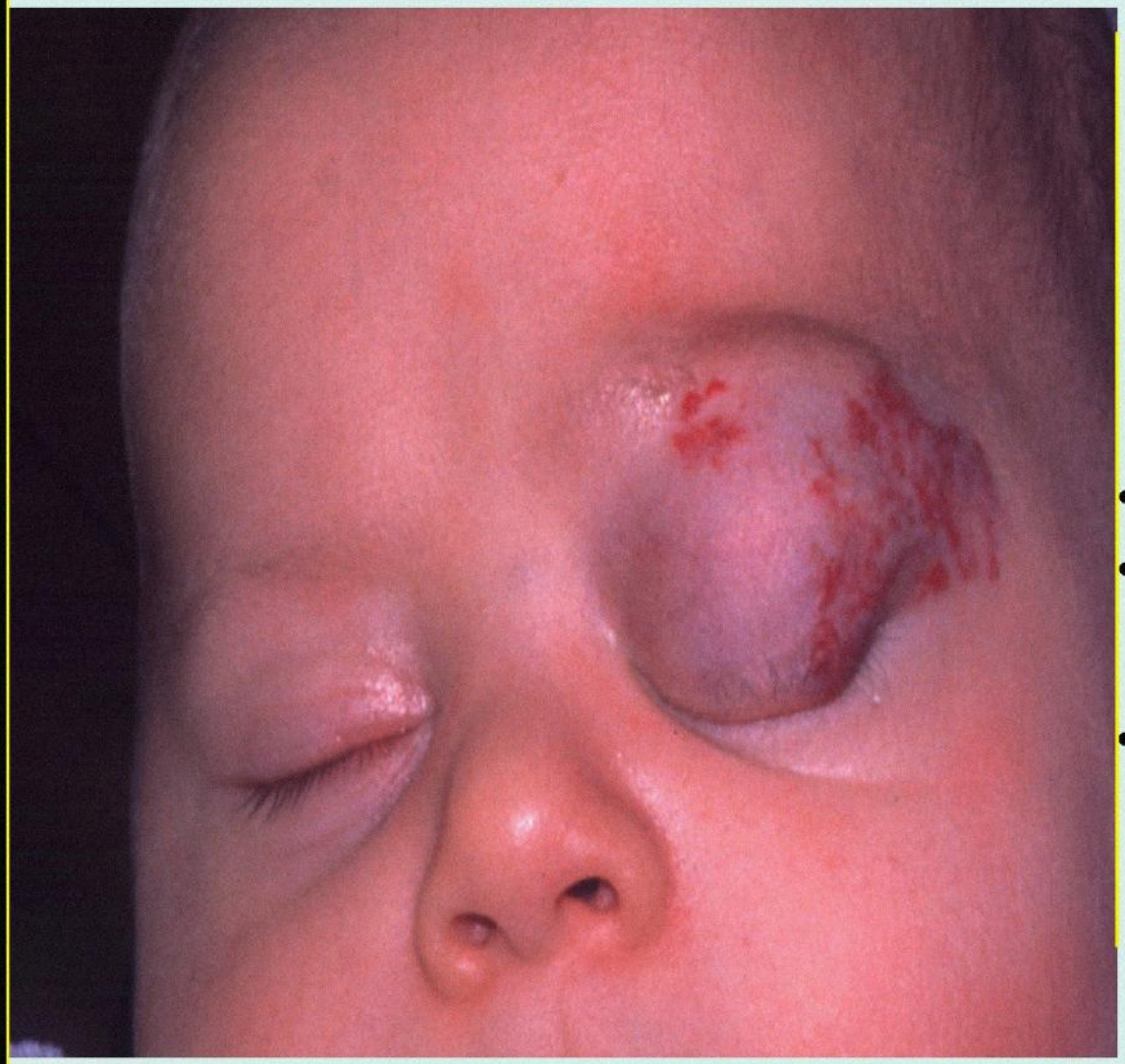
Capillary haemangioma





- Rare tumour which presents soon after birth
- Starts as small, red lesion, most frequently on upper lid
- Blanches with pressure and swells on crying
- May be associated with intraorbital extension
- Grows quickly during first year
- Begins to involute spontaneously during second year

Periocular haemangioma



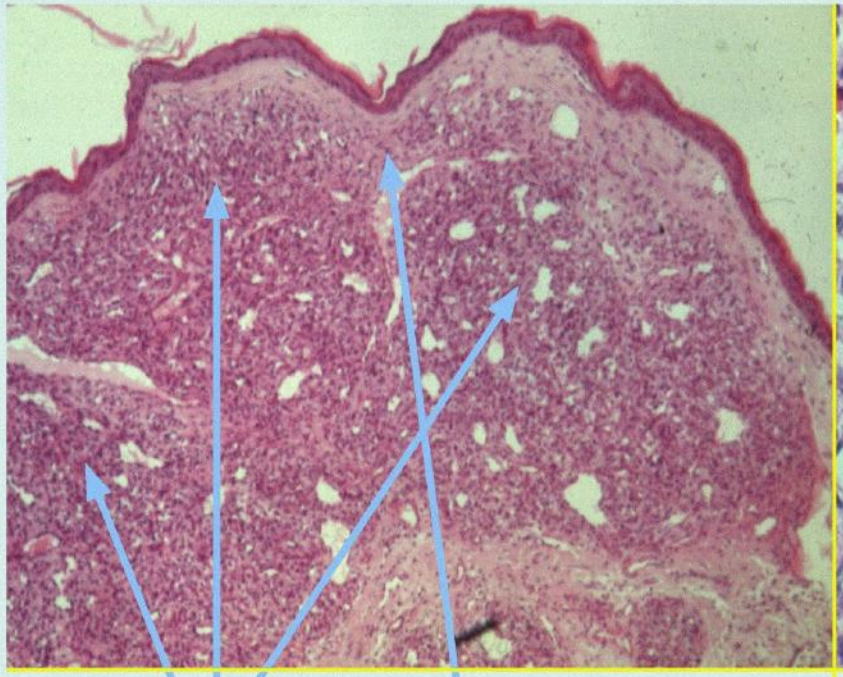
Treatment options

- Steroid injection in most cases
- Surgical resection in selected cases

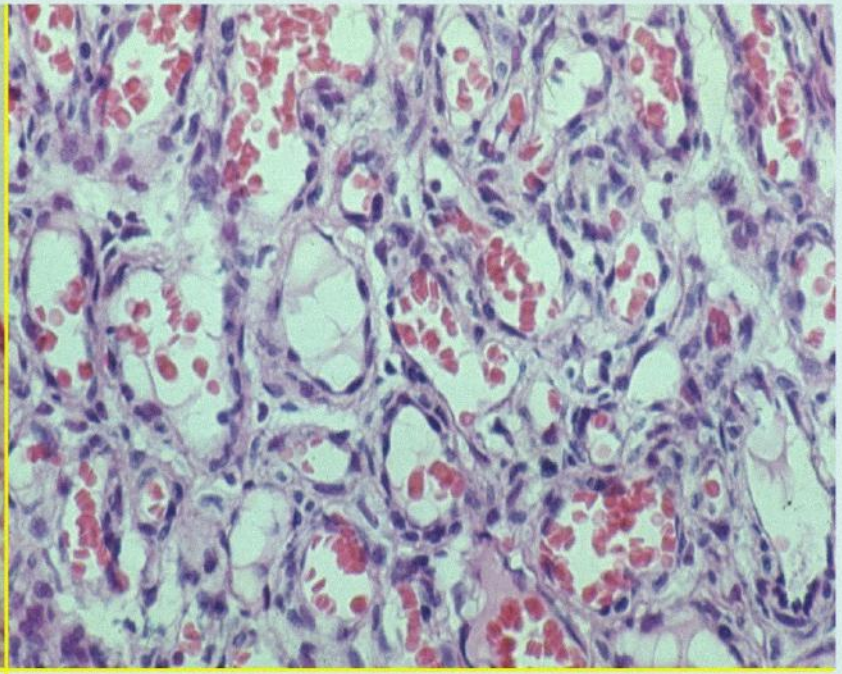
Occasional systemic associations

- High-out heart failure
- *Kasabach-Merritt syndrome* - thrombocytopenia, anaemia and reduced coagulant factors
- *Maffuci syndrome* – skin haemangiomas, endrochondromas and bowing of long bones

Histology of capillary haemangioma

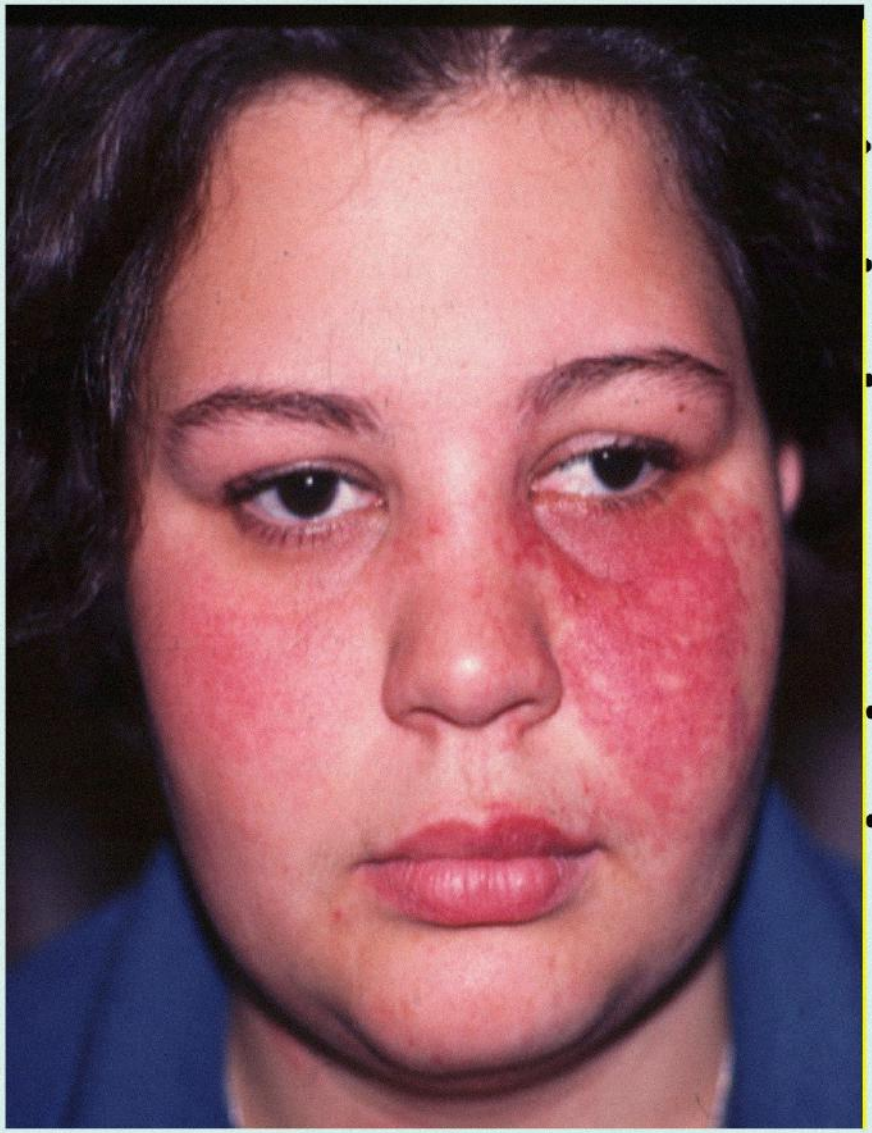


Lobules of capillaries Fine fibrous septae



Lobules under high magnification

Port-wine stain (naevus flammeus)

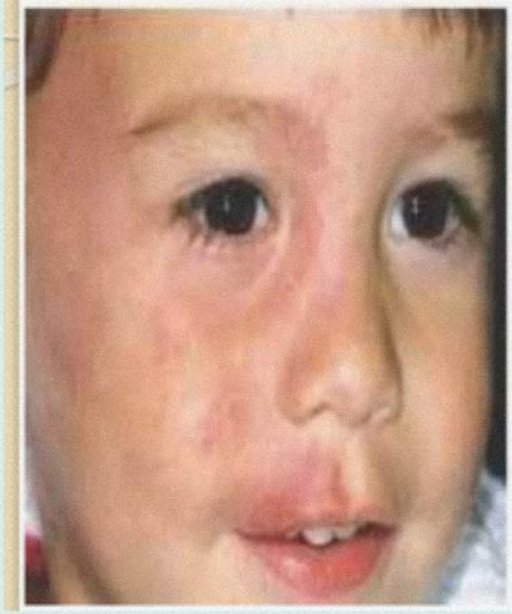


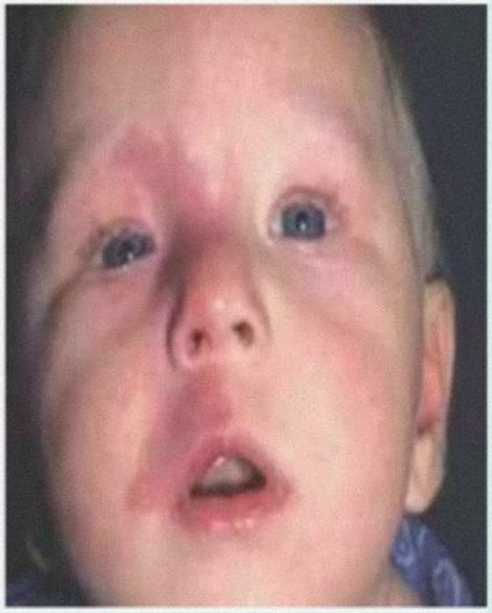
- Rare, congenital subcutaneous lesion
- Segmental and usually unilateral
- Does not blanch with pressure

Associations

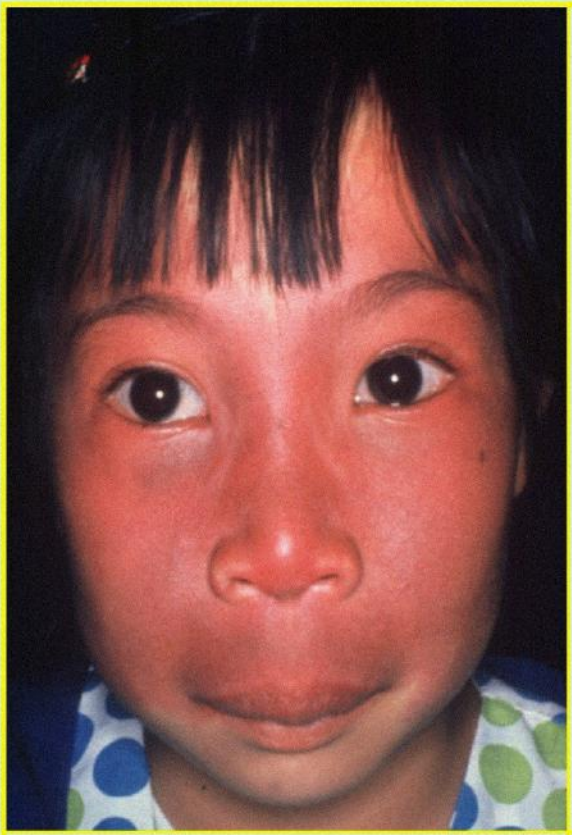
- Ipsilateral glaucoma in 30%
- Sturge-Weber or Klippel-Trenaunay-Weber syndrome in 5%

NAEVUS FLAMMEUS

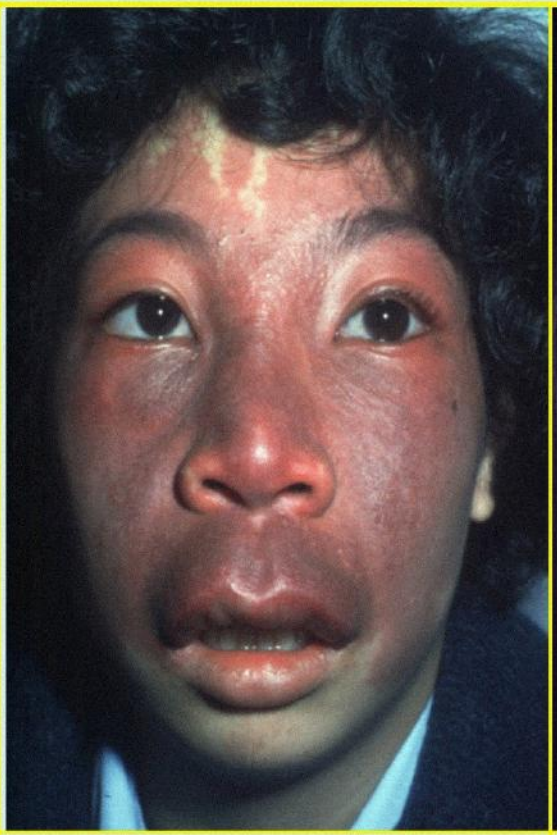




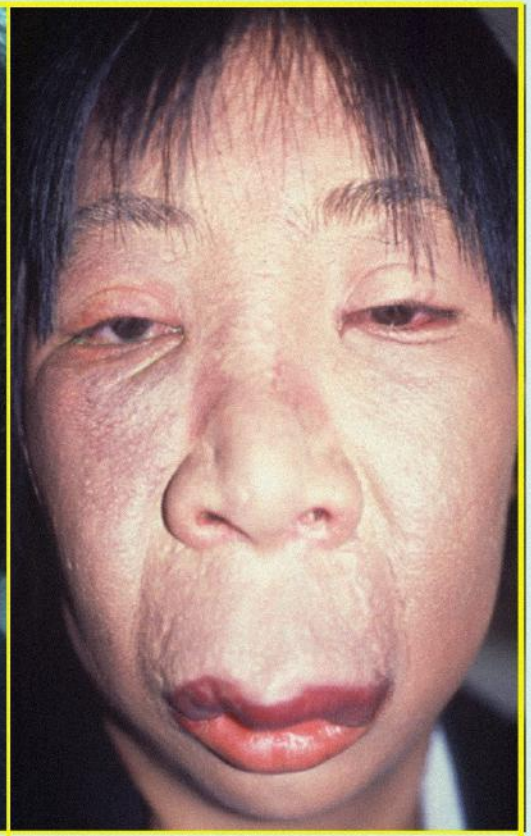
Progression of port-wine stain



Initially red and flat

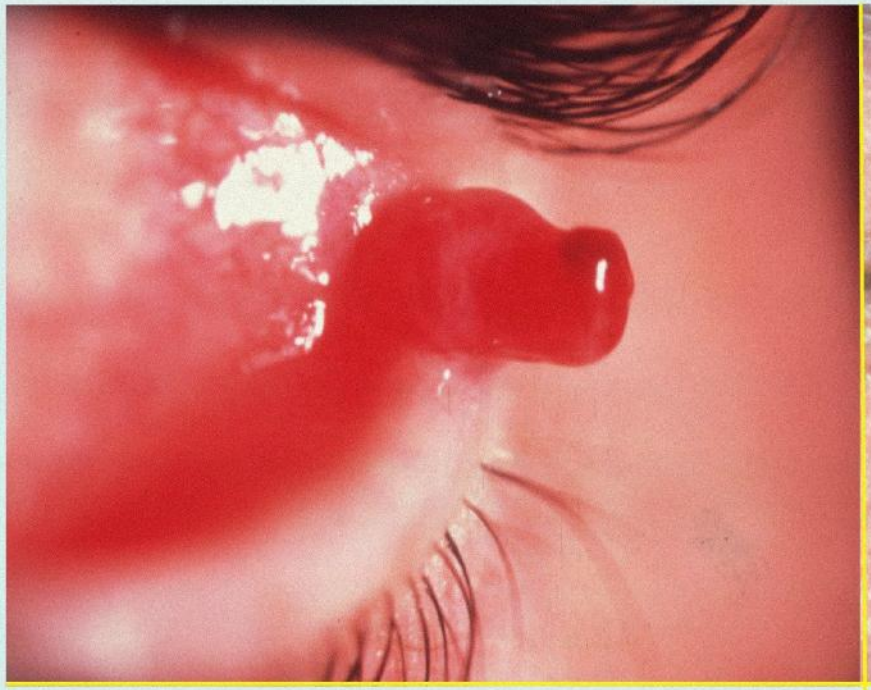


Subsequent darkening and hypertrophy of skin



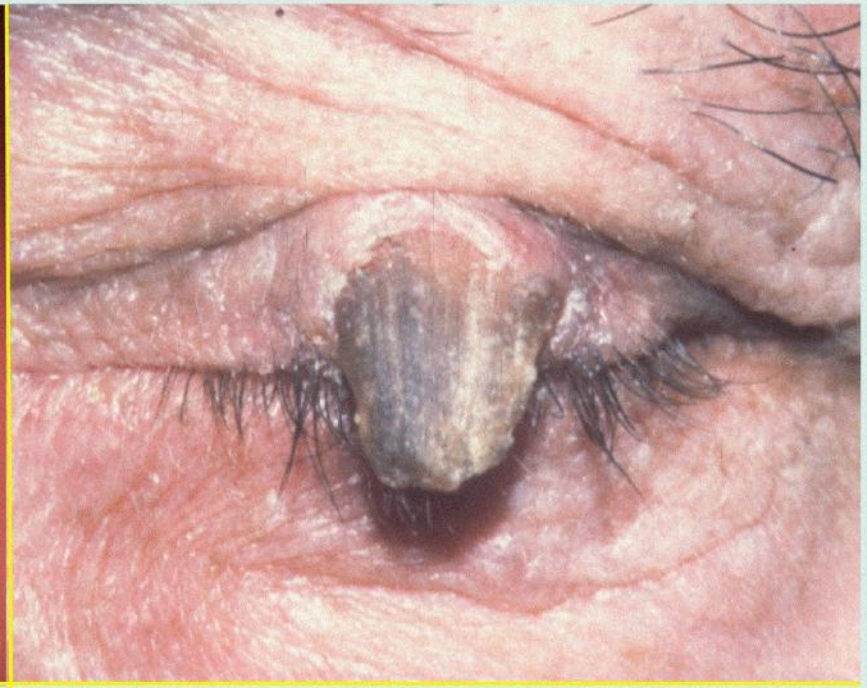
Skin becomes coarse, nodular and friable

Pyogenic granuloma



- Usually antedated by surgery or trauma
- Fast-growing pinkish, pedunculated or sessile mass
- Bleeds easily

Cutaneous horn

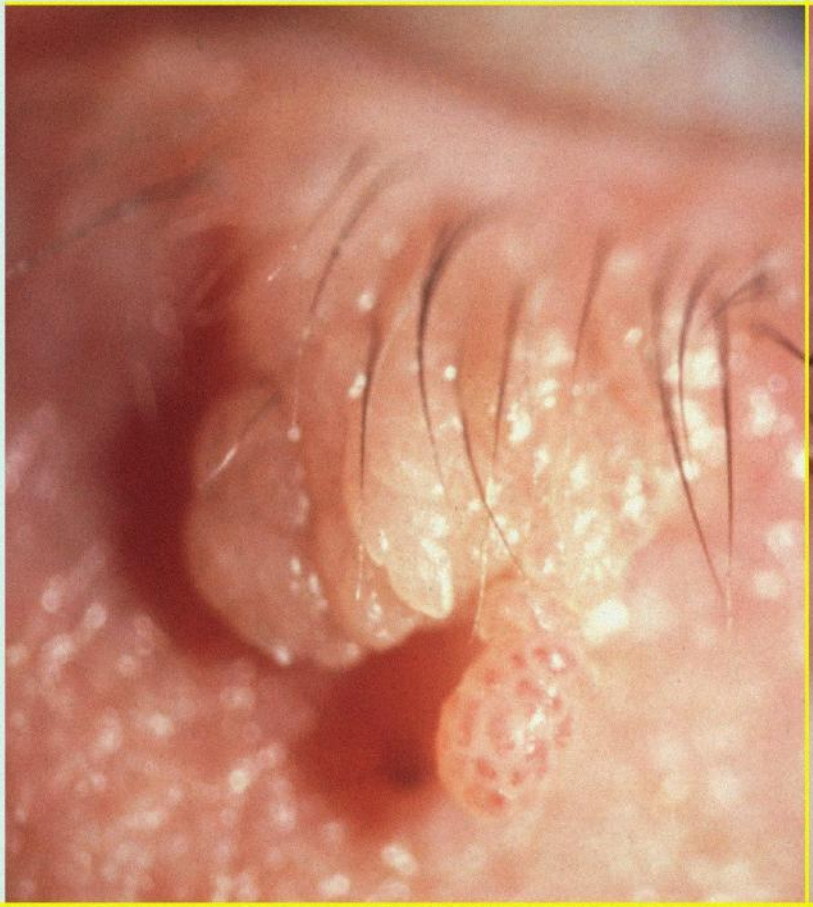


- Uncommon, horn-like lesion protruding through skin
- May be associated with underlying actinic keratosis or squamous cell carcinoma

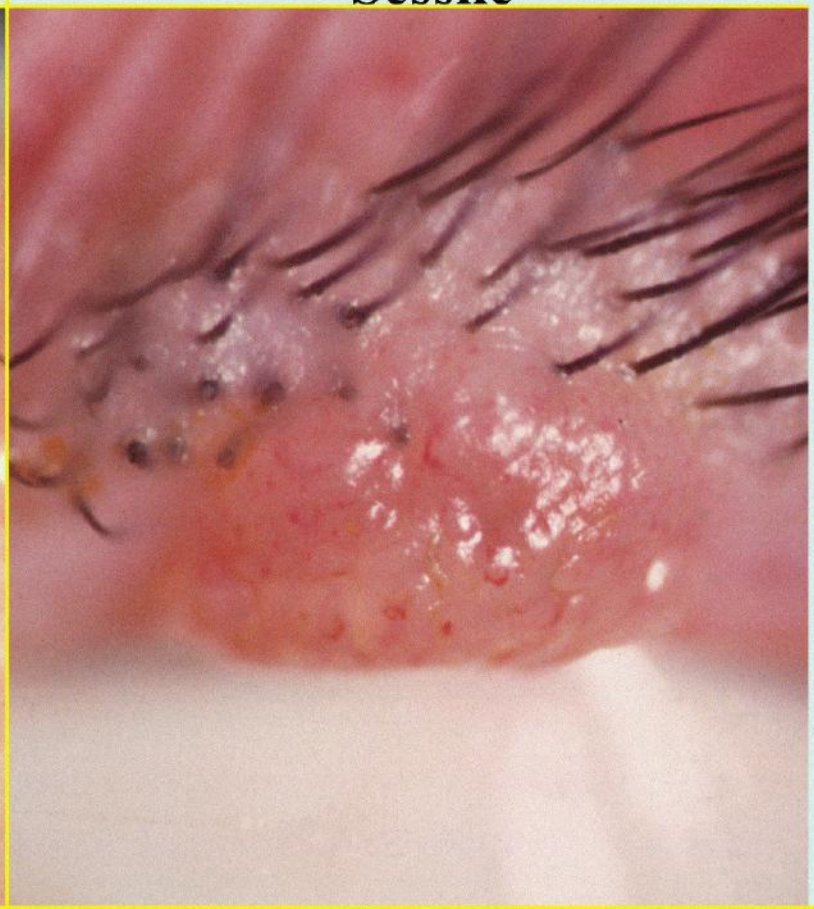
Viral wart (squamous cell papilloma)

- Most common benign lid tumour
- Raspberry-like surface

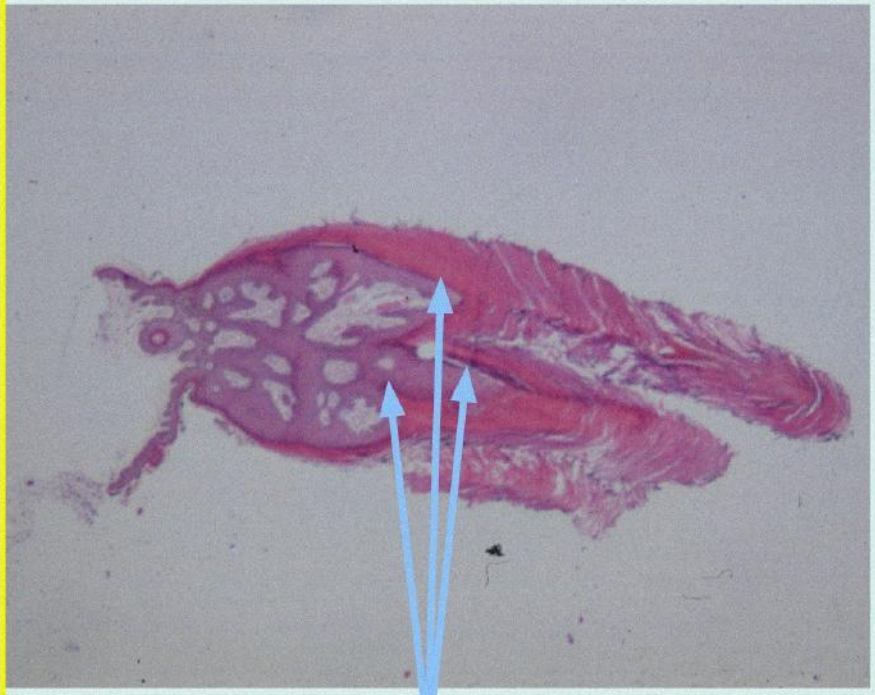
Pedunculated

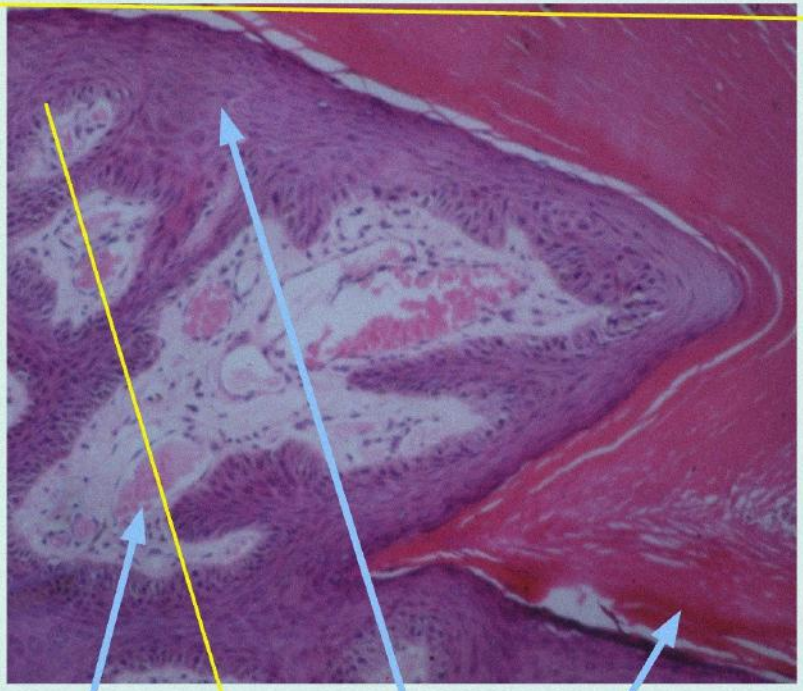


Sessile



Histology of viral wart



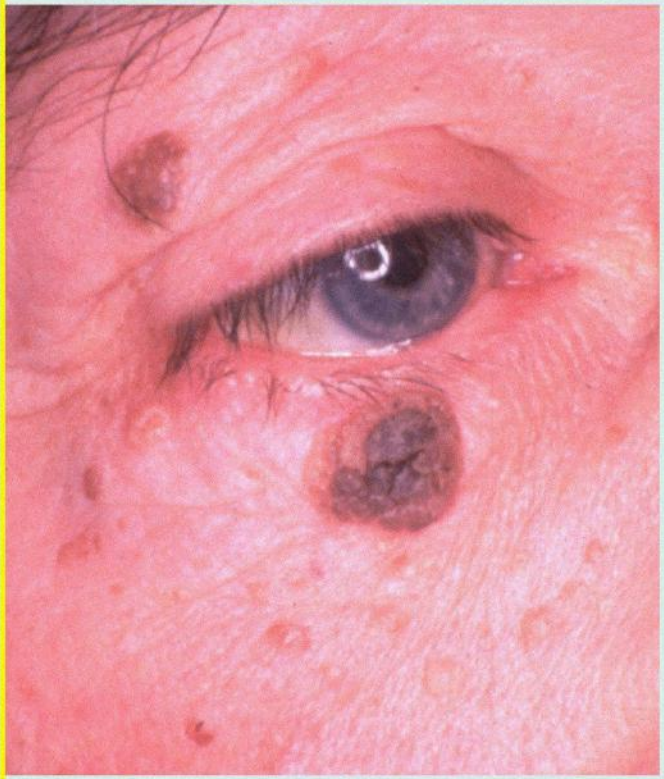


Finger-like projections of fibrovascular connective tissue

Epidermis shows acanthosis (increased thickness) and hyperkeratosis
Rete ridges are elongated and bent inwards

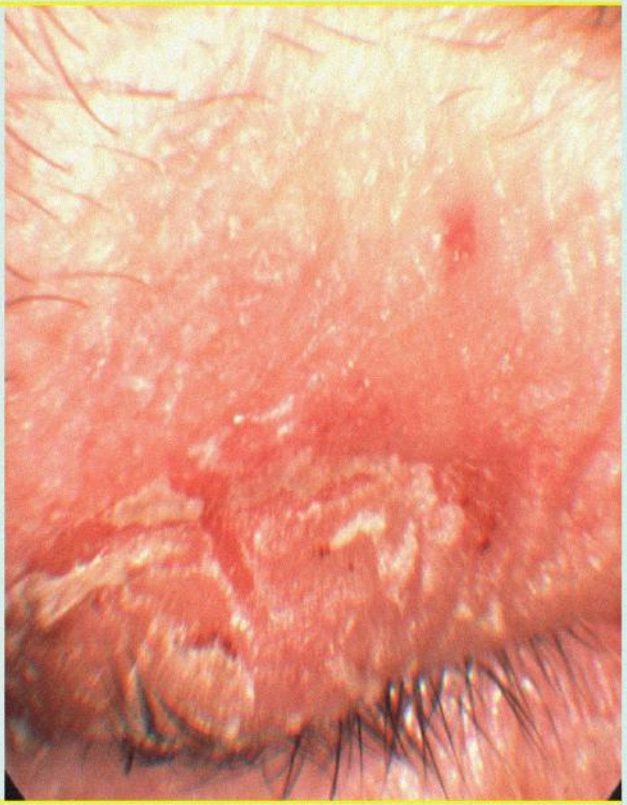
Keratoses

Seborrhoeic



- Common in elderly
- Discrete, greasy, brown lesion
- Friable verrucous surface
- Flat ‘stuck-on’ appearance

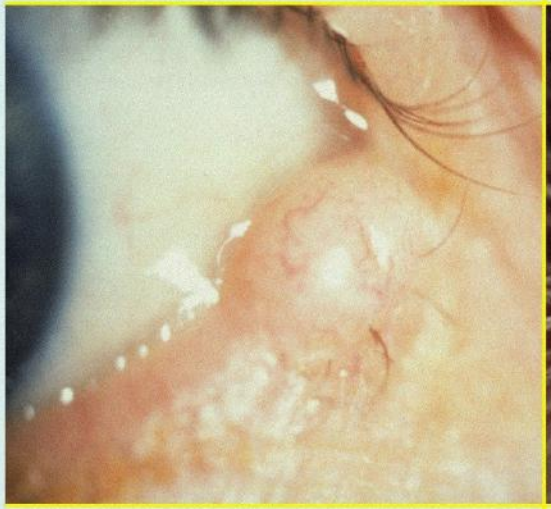
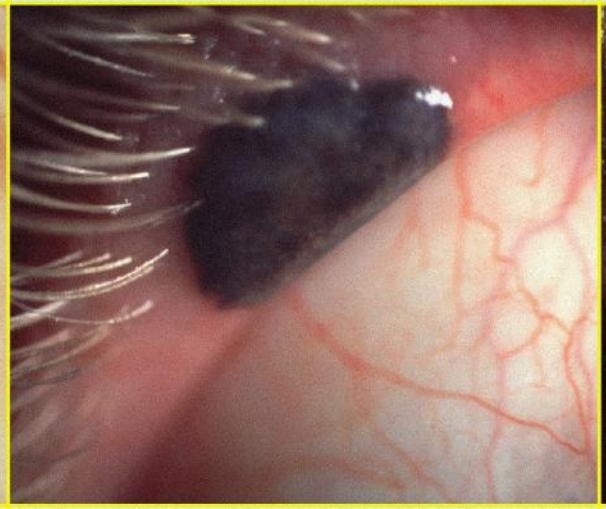
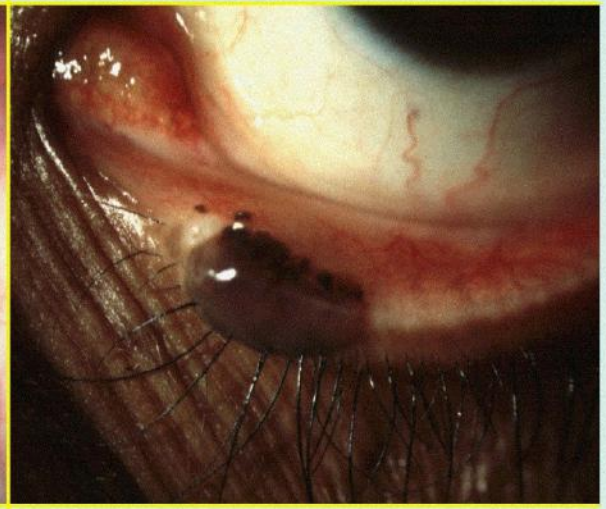
Actinic



- Affects elderly, fair-skinned individuals
- Most common pre-malignant skin lesion
- Rare on eyelids
- Flat, scaly, hyperkeratotic lesion

Naevi

- Appearance and classification determined by location within skin
- Tend to become more pigmented at puberty

Intradermal	Junctional	Compound
		
• Elevated • May be non-pigmented • No malignant potential	• Flat, well-circumscribed • Pigmented • Low malignant potential	• Has both intradermal and junctional components

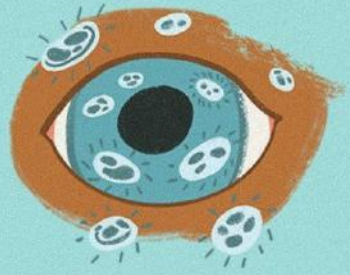
MALIGNANT EYELID TUMORS

1. Basal cell carcinoma
2. Squamous cell carcinoma
3. Meibomian gland carcinoma
4. Melanoma
5. Kaposi sarcoma
6. Merkel cell carcinoma

Eyelid Cancer Symptoms

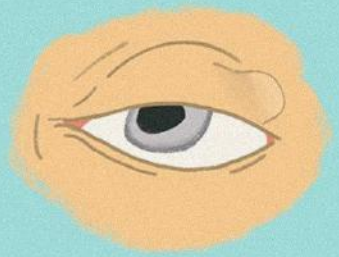
A change in eyelid appearance

Eyelid swelling/ thickening



Chronic eyelid infections

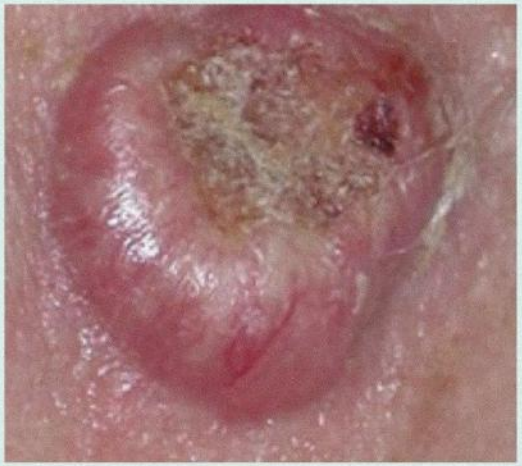
A non-healing eyelid ulceration



A spreading, colorless mass on eyelid

The first detailed description of BCC was that of an eyelid tumor (rodent ulcer, Jacobs 1827)

Jacob's ulcer, chancroid ulcer, ulcus exedens, benign skin cancer, rodent ulcer, and basal cell epithelioma, and noli me tangere (don't touch me or touch me not)

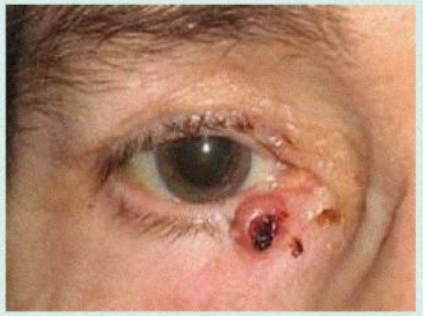


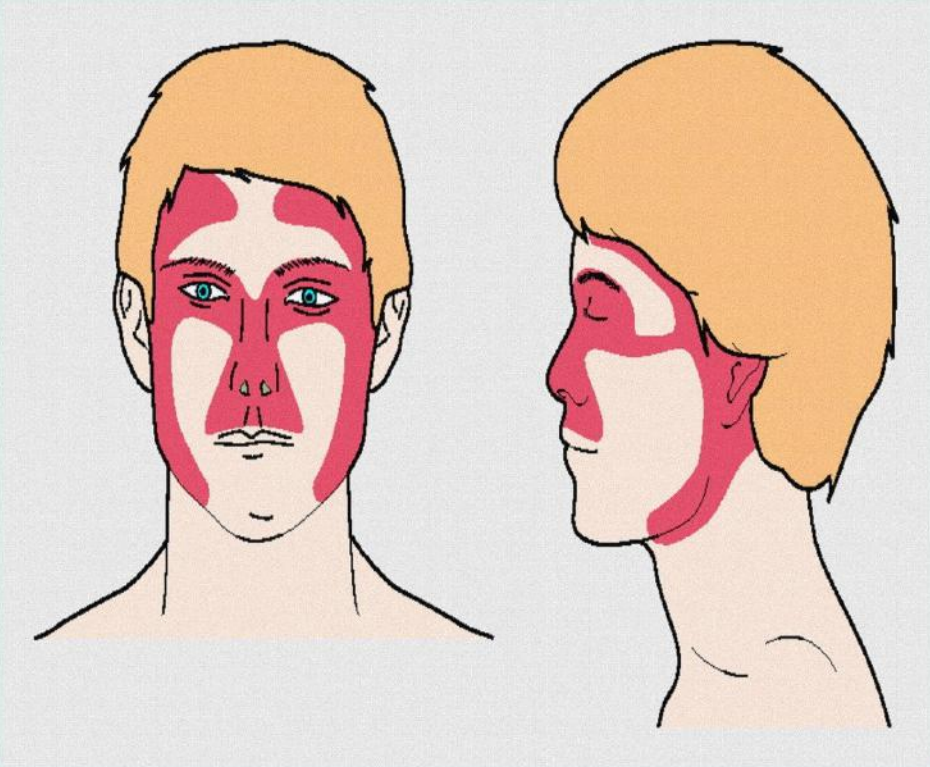
The most common malignancy in humans

Most frequent periocular malignancy accounting for 90% of eyelid malignancies

A slow-growing tumor, and rarely metastasizes but can lead to significant morbidity in the periocular region as a result of orbital invasion or if neglected and treated inadequately

Disease of elderly





90% affect the Head and Neck area

Incidence

- Australia has the highest rate in the world (884/100,000 population/ year)
- The incidence is increasing worldwide by up to 10% a year
- A study of the white population in North America has estimated a lifetime risk of 30% of developing BCC
- 95% of BCCs occur in people aged between 40 and 79 years

References

- ***Staples MP, Elwood M, Burton RC, et al: Non-melanoma skin cancer in Australia: the 2002 national survey and trends since 1985. Med J Aust 184: 6-10, 2006***
- ***Wong CS, Strange RC, Lear JT: Basal cell carcinoma. BMJ 327: 794-8, 200***
- ***Miller DL, Weinstock MA: Nonmelanoma skin cancer in the United States: incidence. J Am Acad Dermatol 30: 774-8, 1994***
- ***Kopf AW: Computer analysis of 3531 basal-cell carcinomas of the skin. J Dermatol 6: 267-81, 1979***

ENVOIRNMENTAL

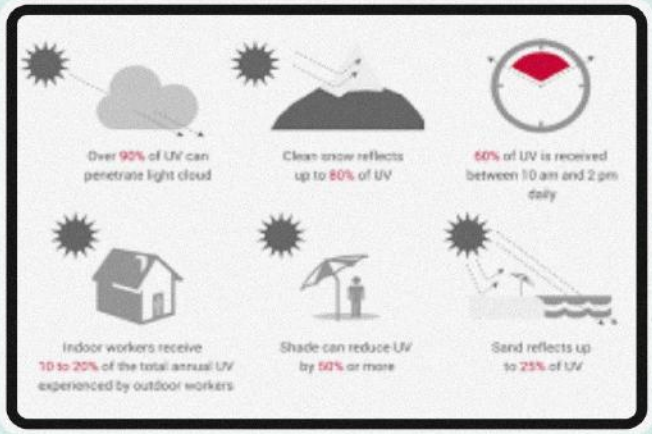
PATIENT FACTORS

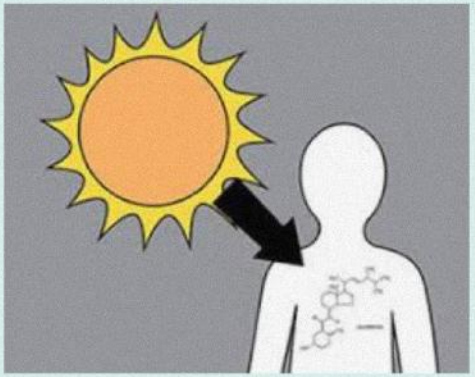
HERIDITARY

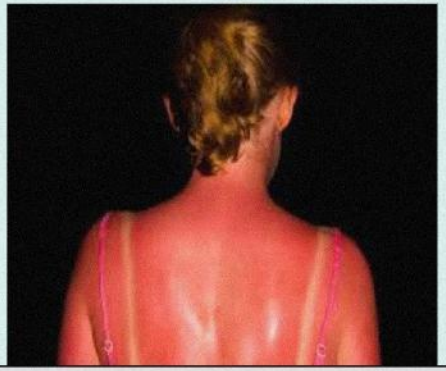
IMMUNOSUPPRESSION

ENVOIRNMENTAL FACTORS

- Exposure to ultraviolet (UV) light
- Exposure to ionizing radiation
- Arsenic
- Therapeutic combination of oral methoxasalen (psoralen) and ultraviolet radiation A (UVA) (known as PUVA)



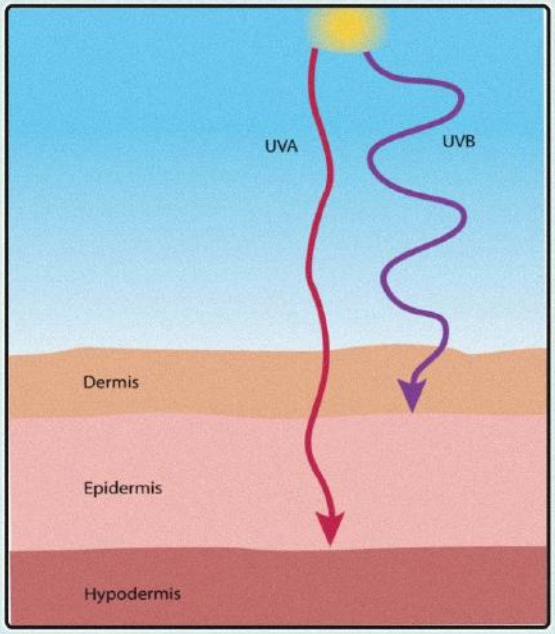


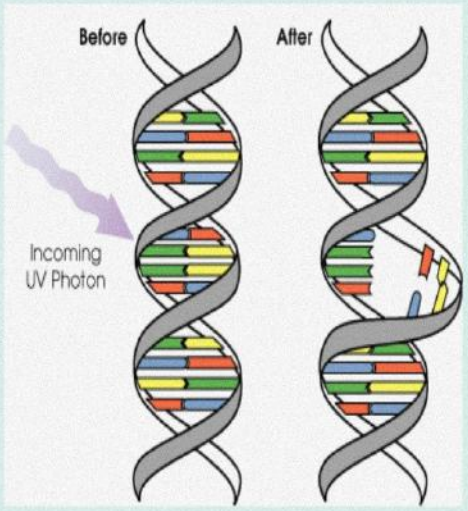


Short-wavelength UVB radiation (290–320 nm, sunburn rays) plays a more important role in BCC formation than long-wavelength UVA radiation

UVB radiation damages DNA and its repair system, and changes the immune system resulting in progressive genetic alterations that lead to the formation of neoplasms

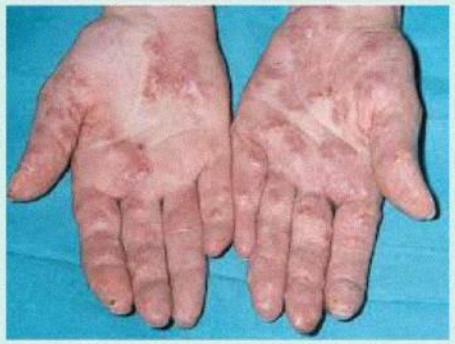
Mutations in the TP53 tumor-suppressor gene induced by UV have been found in about 50% of BCC cases

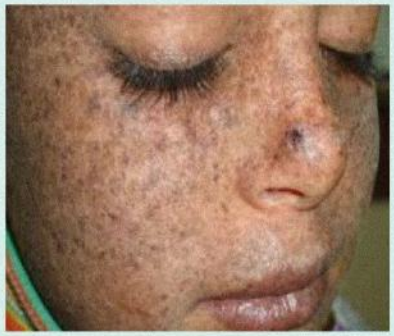


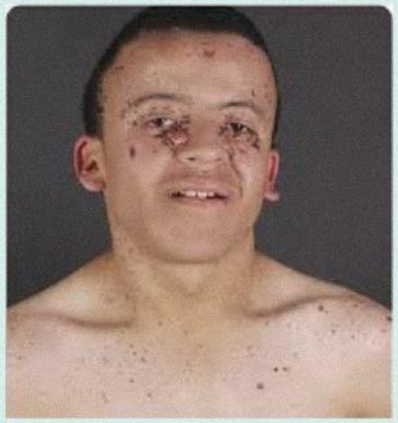


HERIDITARY FACTORS

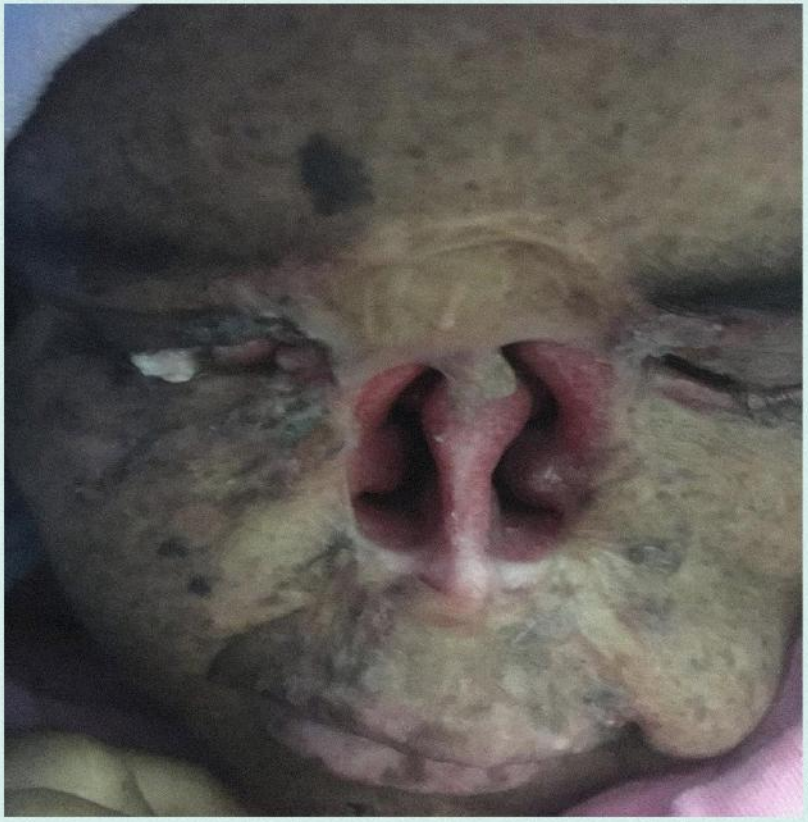
- ***Albinism***
- ***Xeroderma pigmentosum***
- ***Gorlin syndrome***
- ***Rombo syndrome***
- ***Basex syndrome***







XERODERMA PIGMENTOSUM



RISK FACTORS

- ***Immunosuppression***

  HIV, Recipients of solid organ transplants

- ***Patient factors***

  Fair complexion
  Skin that burns and does not tan
  childhood freckles
  cutaneous scars, following burns

GENETICS

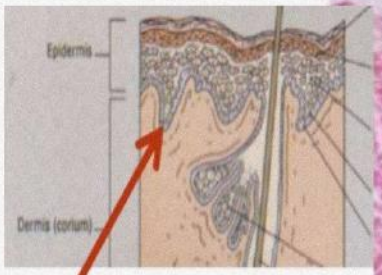
Many BCCs have mutations in the PTCH1 gene, a member of the Hedgehog (Hh) signaling pathway

Hedgehog pathway deregulation results in nuclear accumulation of **beta-catenin**

which in turn increases the transcription of MYC and cyclin D1 genes (involved in cell cycle control) and matrix metalloproteinase 7 gene (involved in stromal degradation).

Beta-catenin accumulation play a role in tumor proliferation and tumor invasion

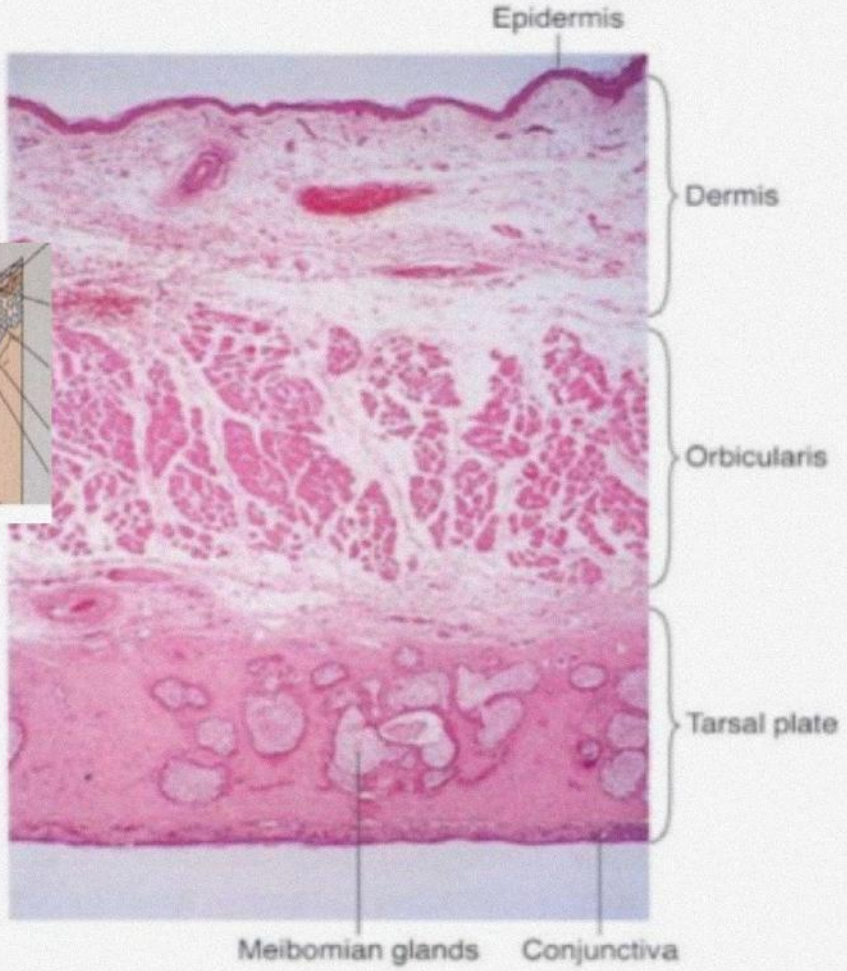
Normal Histology of the Eyelid



Arises from

- Stratum basale
- Outer root sheath of the hair follicle

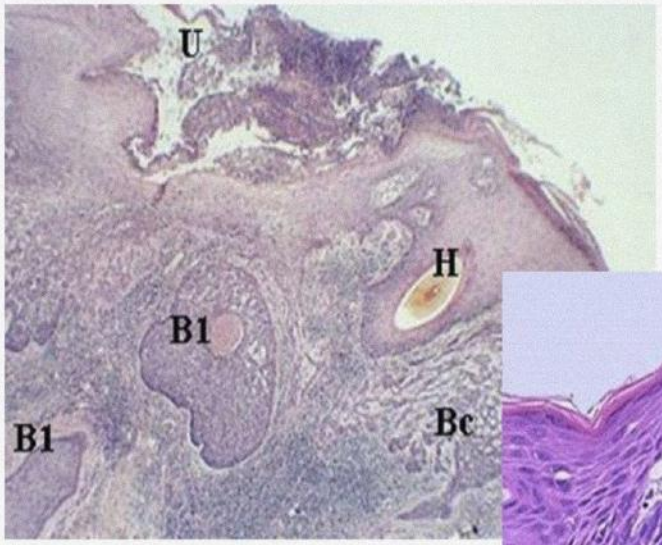
Only in hair-bearing tissue



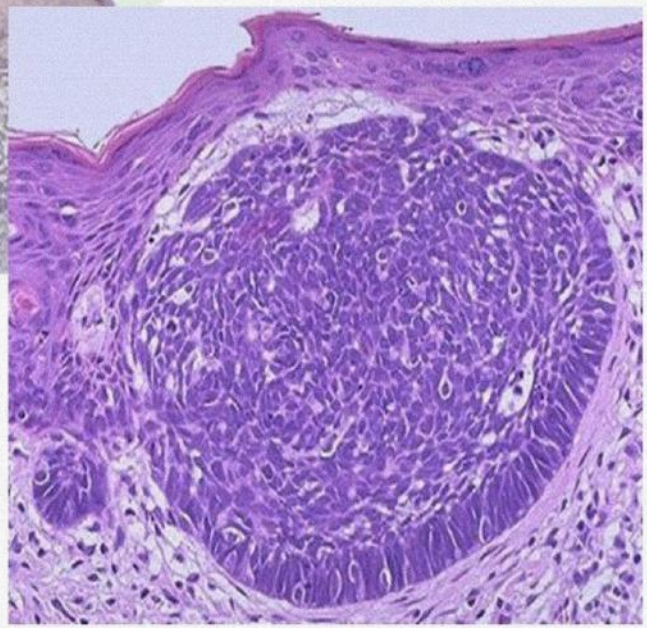
- ***Basal cell carcinoma is characterized by proliferation of basaloid cells arising from the epidermis and invading the dermis***

- ***Classically, palisading of peripheral tumor cells is seen and a clear space is noted between the tumor nodules and the adjacent stroma***

- ***This crack/retraction artefact is considered to be a pathognomonic histological feature of BCC and is thought to be secondary to absence of normal adhesion molecules, such as the bullous pemphigoid antigen in the tumor cells***



Most common malignancy of the eyelid



Blue basaloid tumor cells arranged in nests and cords

www.mrcophth.com

CLASSIFICATION

- No universally agreed classification for BCC
- Two main classification systems exist:

Histopathological growth pattern (morphological)

Histological differentiation

Morphological classification has the greatest clinical significance

MORPHOLOGICAL CLASSIFICATION

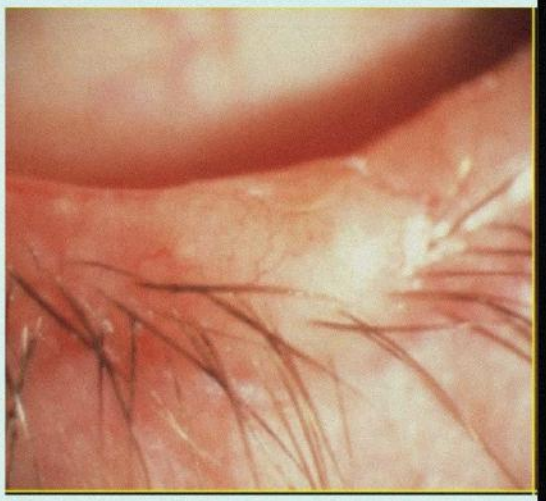
- ***Nodular, including micronodular***
- ***Superficial***
- ***Infiltrative, including morpheic***
- ***Mixed***

- The morphological classification aids in stratifying BCC into low- and high-risk histological subtypes

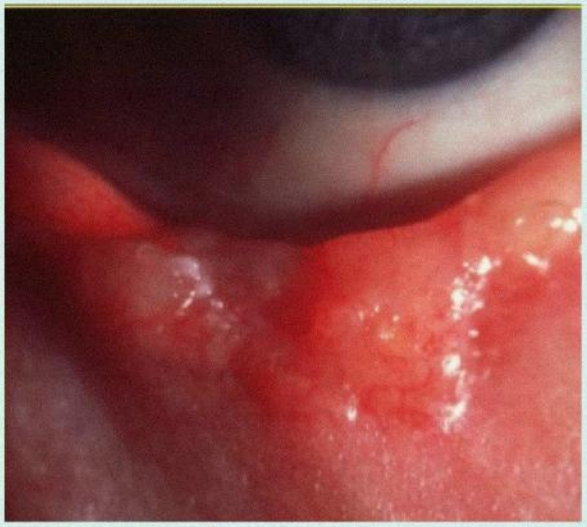
- The high-risk BCCs (infiltrative, morpheic, and micronodular) are characterized by an increased probability of subclinical extension, incomplete excision, aggressive local behavior, and recurrence

NODULAR BCC

- **EARLY**
- ***Shinny nodule with surface vascularization***

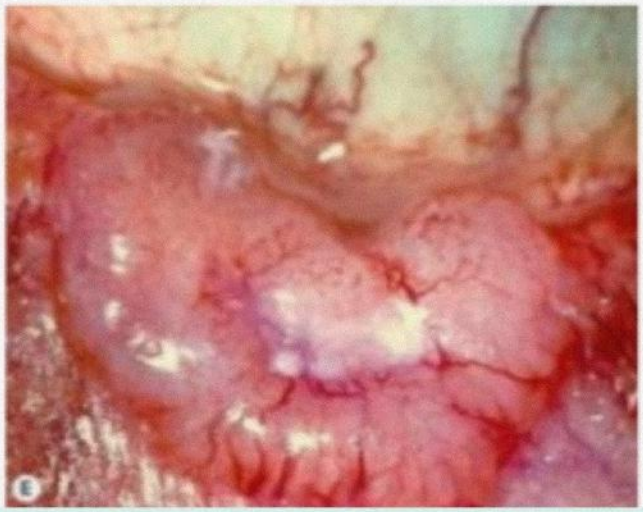


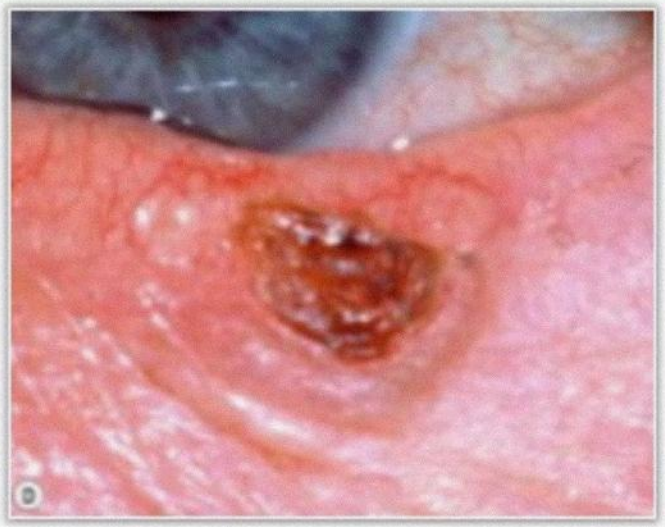
- **LATE**
- ***Slow progression and may destroy a large portion of the eyelid***



RODENT ULCER

- Central ulceration
- Pearly raised rolled edges
- Dilated vessels over its margins
- Telangectasis

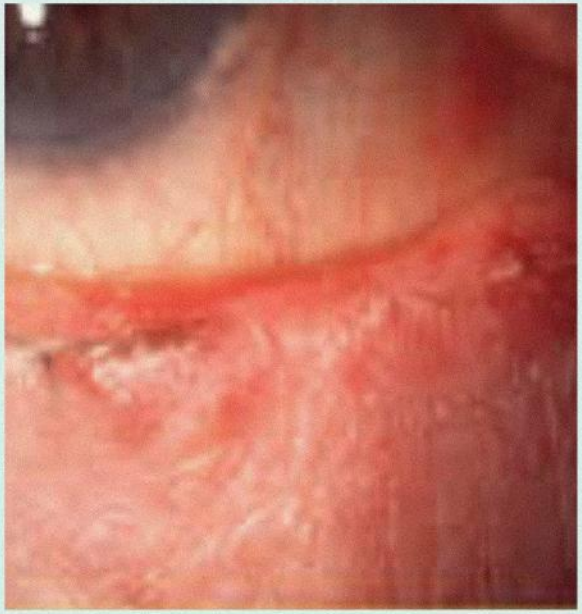




SCLEROSING BCC

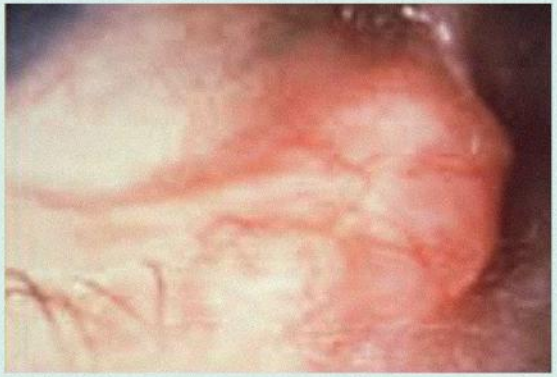
indurate plaque with loss of eyelashes

May mimic chronic blephritis



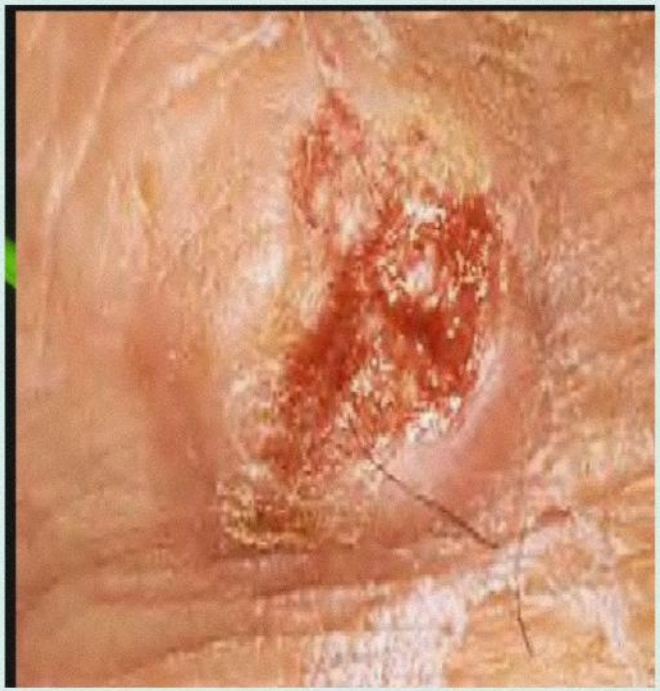
Spread radially beneath the epidermis

Margins are difficult to delineate



NODULO-ULCERATIVE BCC

- Small,slow growing
- Firm
- Telangectasias
- Ulceration



HISTOLOGICAL CLASSIFICATION

- 20 subtypes have been described

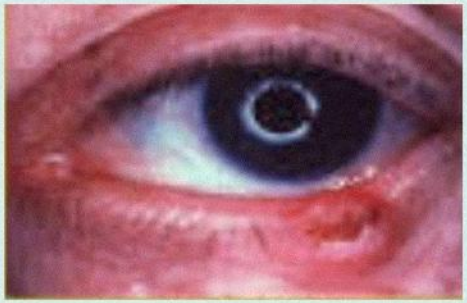
  Except for squamous differentiation the other subtypes have no clinical significance

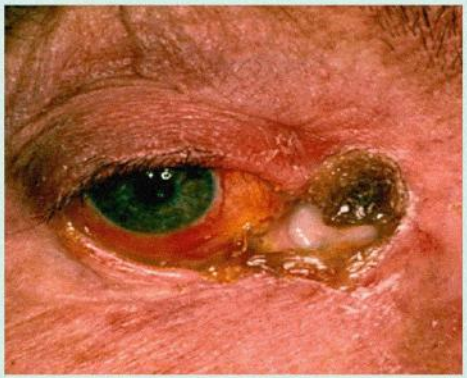
  The term ***basosquamous carcinoma or metatypical*** ,is there is presence of squamous differentiation in a BCC and is associated with a higher incidence of recurrence and metastasis

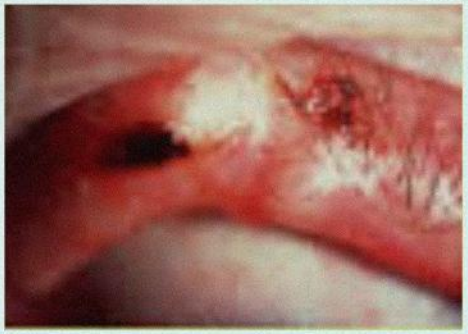
- The presence of perineural invasion on histopathology is associated with a poorer prognosis

Frequency of location of BCC

- Lower lid 70%
- Medial Canthus 15%
- Upper lid 10%
- Lateral Canthus 5%





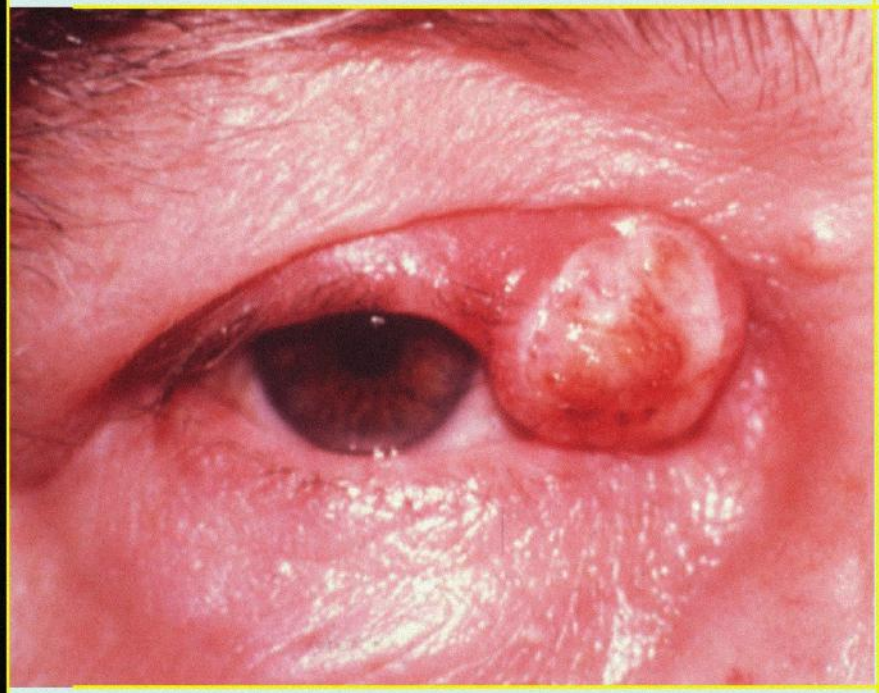
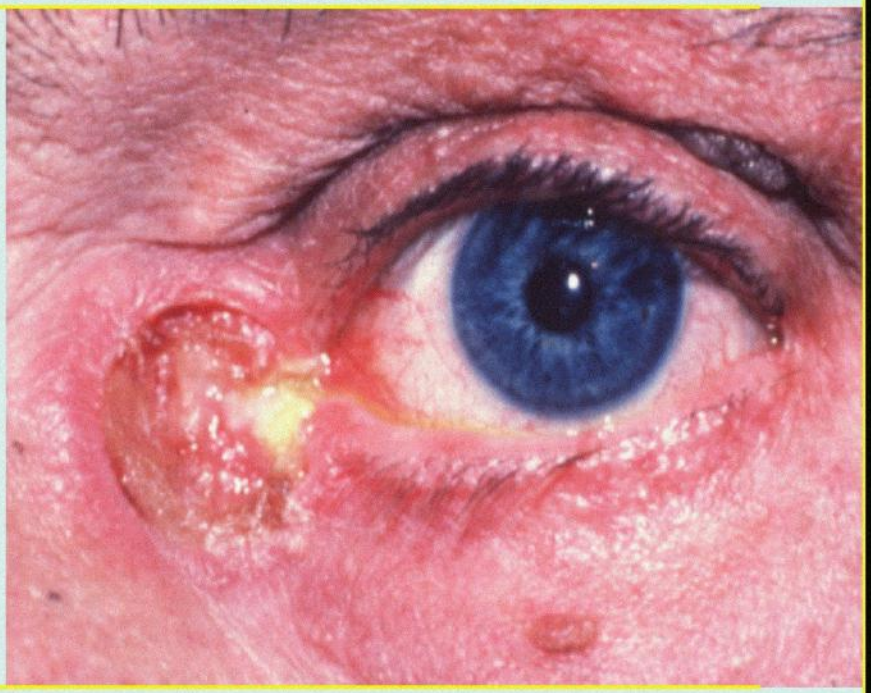


Squamous Cell Carcinoma (SCC)

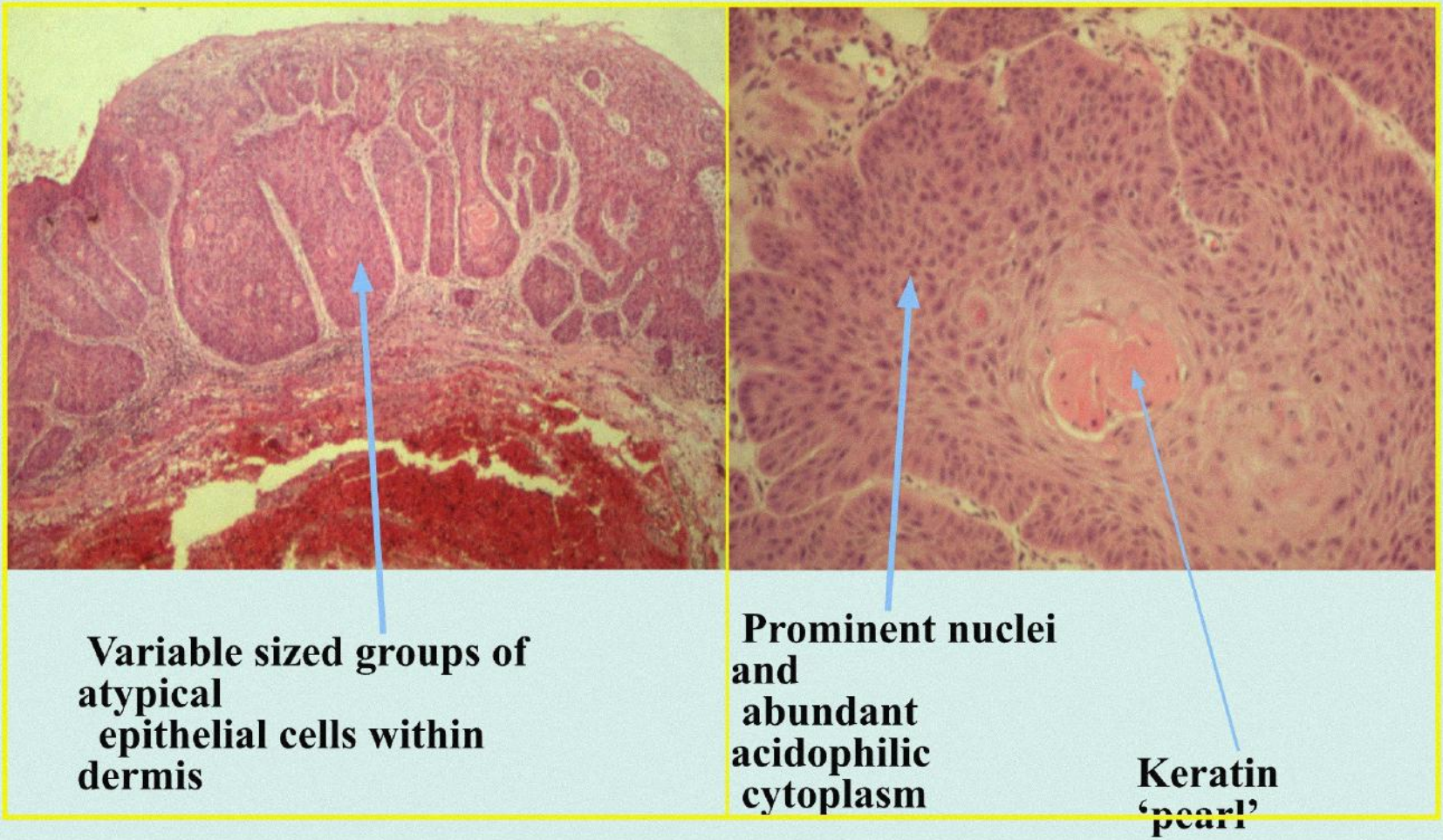
- **Squamous cell carcinoma (SCC)** is a malignant neoplasm of keratinizing epidermal cells.
- It frequently occurs on sun-exposed skin or at the base of skin lesion.
- SCC is less common than BCC.
- SCC can be highly aggressive, has the potential to metastasize, and may lead to death if not treated early and correctly.

Squamous cell carcinoma

- Less common but more aggressive than BCC
- May arise *de novo* or from actinic keratosis
- Predilection for lower lid

Nodular	Ulcerative
	
• Hard, hyperkeratotic nodule • May develop crusting • Surface vascularization	• Red • Borders sharply defined, indurated and elevated

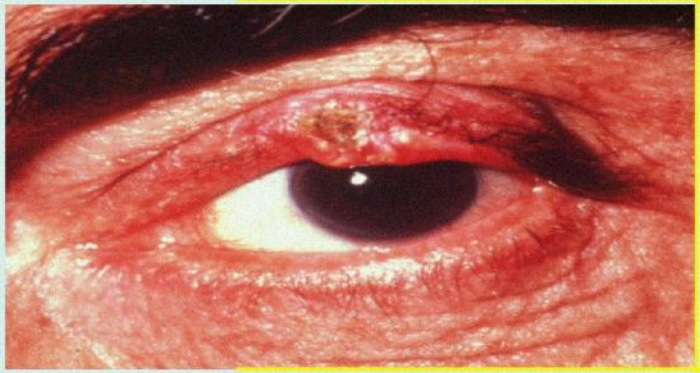
Histology of squamous cell carcinoma



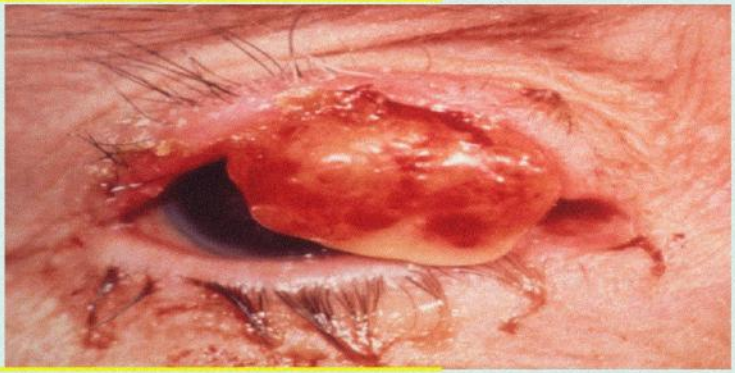
Meibomian gland carcinoma

- Very rare aggressive tumour with 10% mortality
- Predilection for upper lid

Nodula



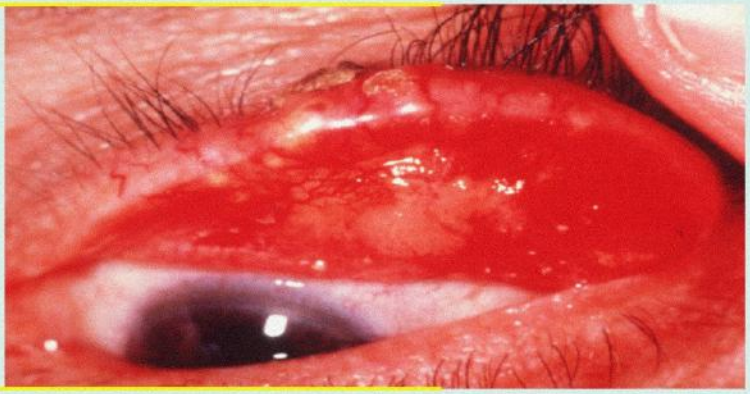
Hard nodule; may mimic a



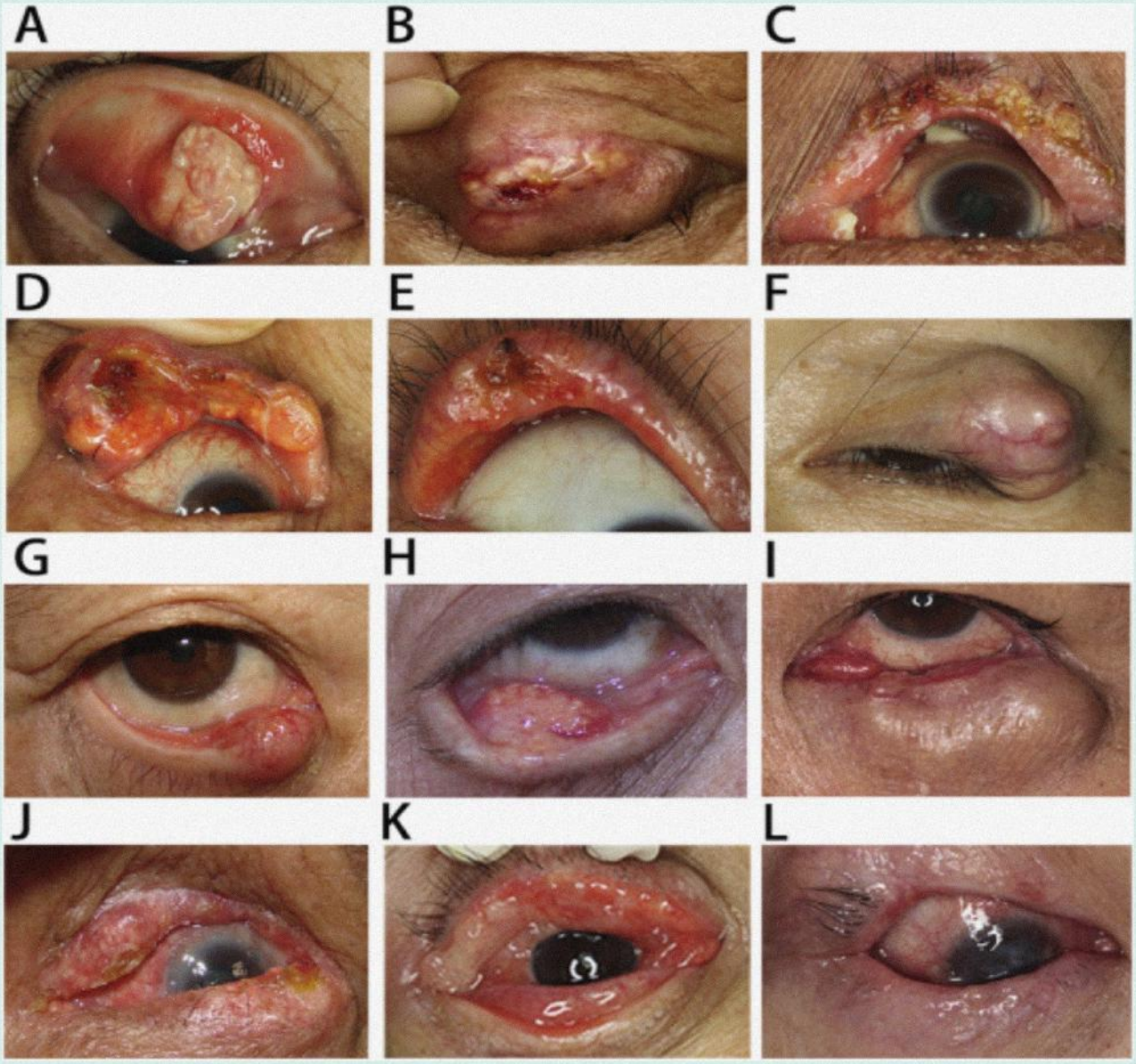
Very large tumour

Spreadi

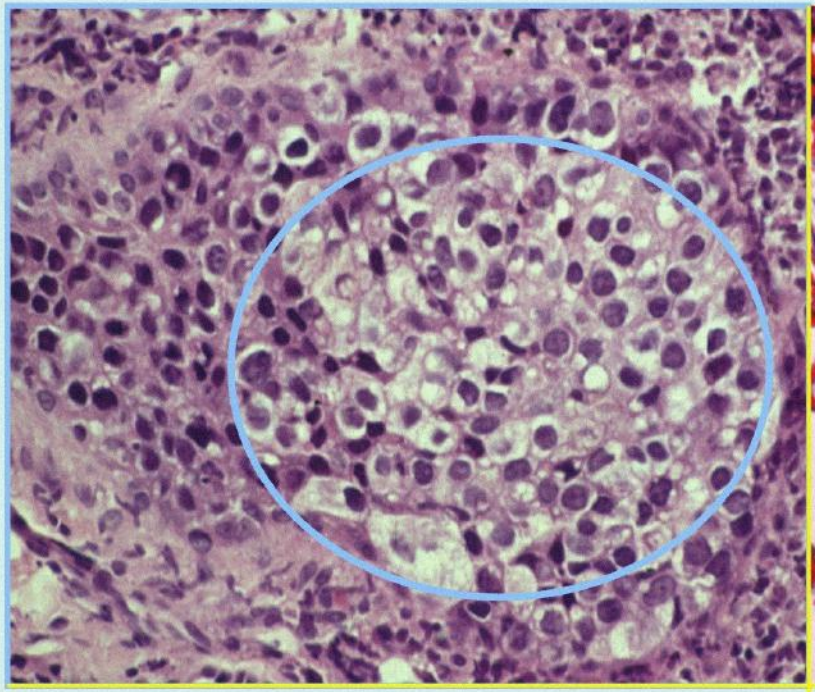
Diffuse thickening of lid margin and loss of lashes



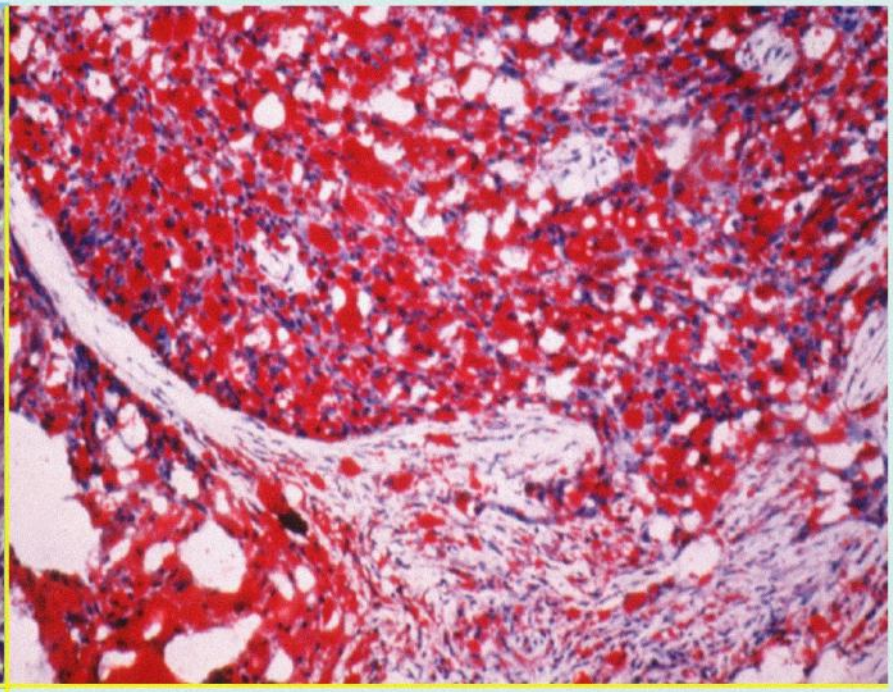
Conjunctival invasion; may mimic chronic conjunctivitis



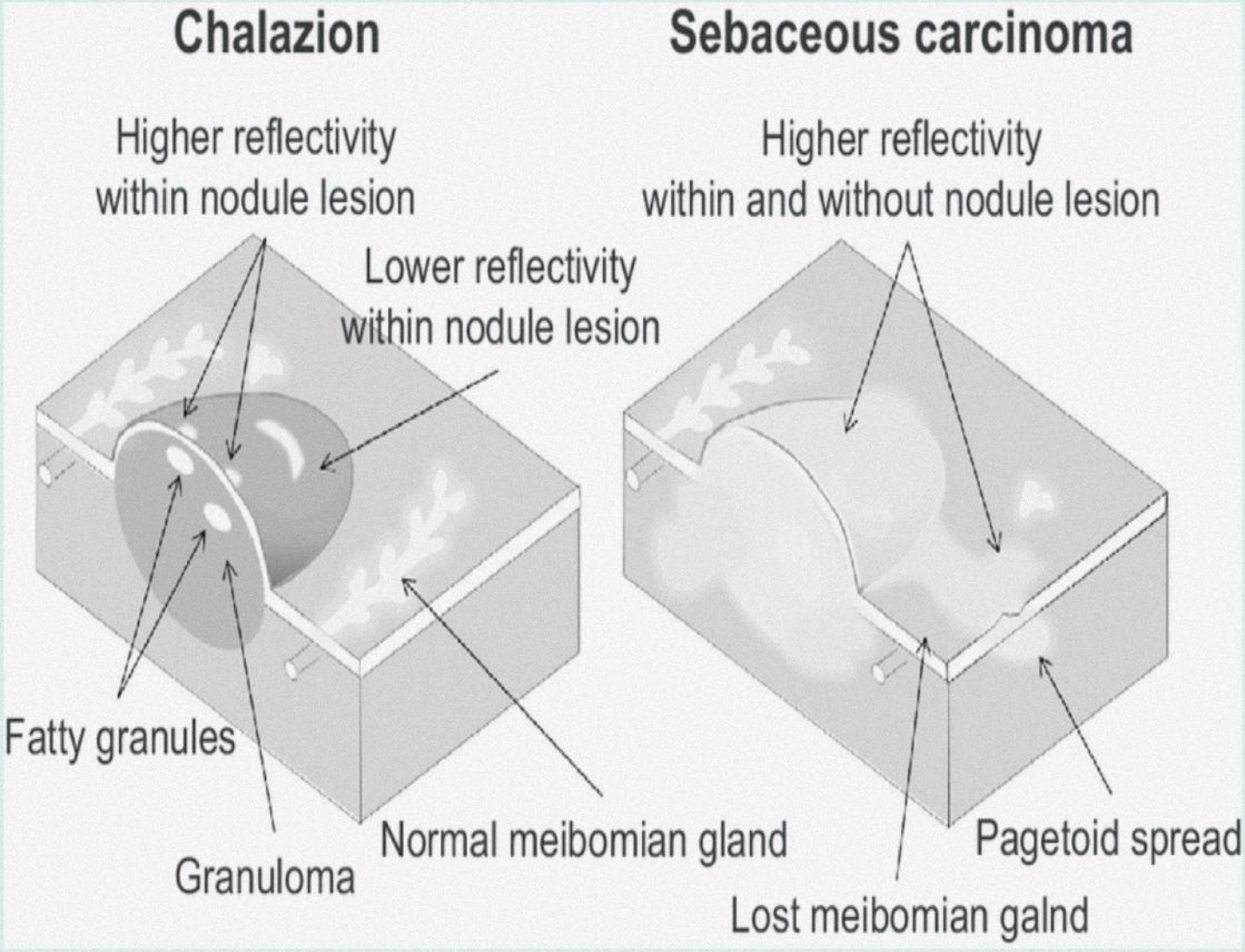
Histology of meibomian gland carcinoma



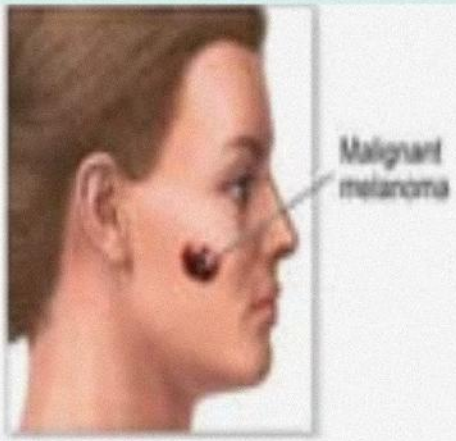
Cells contain foamy vacuolated cytoplasm and large hyperchromatic nuclei

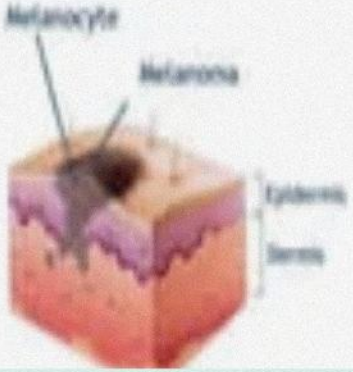


Cells stain positive for fat

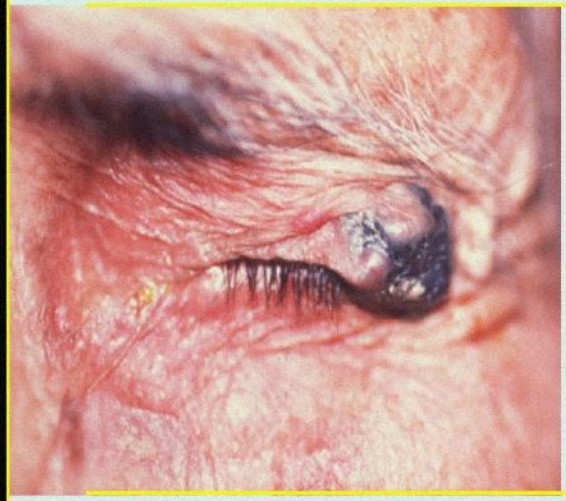
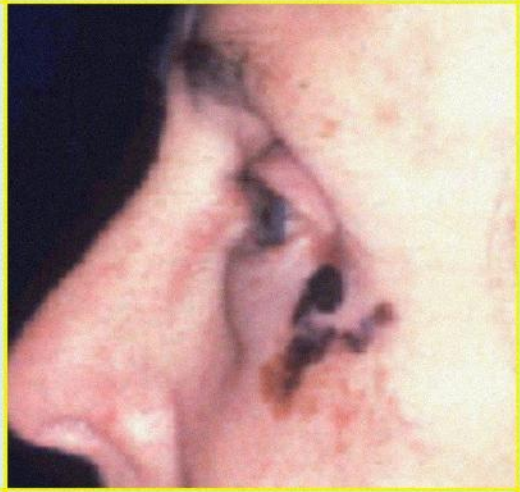

Chalazion
Sebaceous carcinoma
Higher reflectivity
within nodule lesion
Lower reflectivity
within nodule lesion
Higher reflectivity
within and without nodule lesion
Fatty granules
Granuloma
Normal meibomian gland
Pagetoid spread
Lost meibomian galnd

- *Melanoma* is a very serious form of skin cancer.
- Melanoma is cancer of the *melanocytes*.
- Melanocytes are located in the *Stratum Basale* and produce *melanin*.



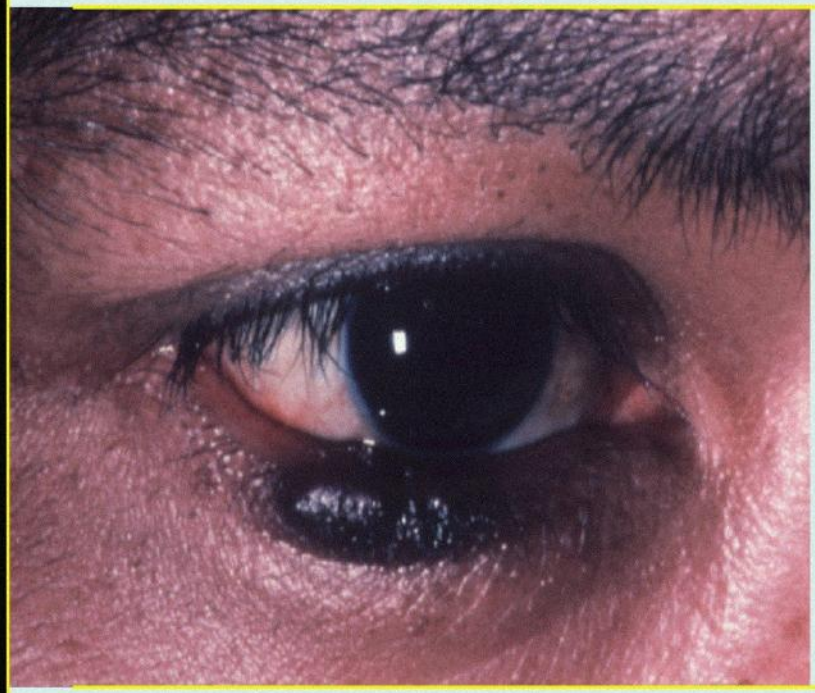
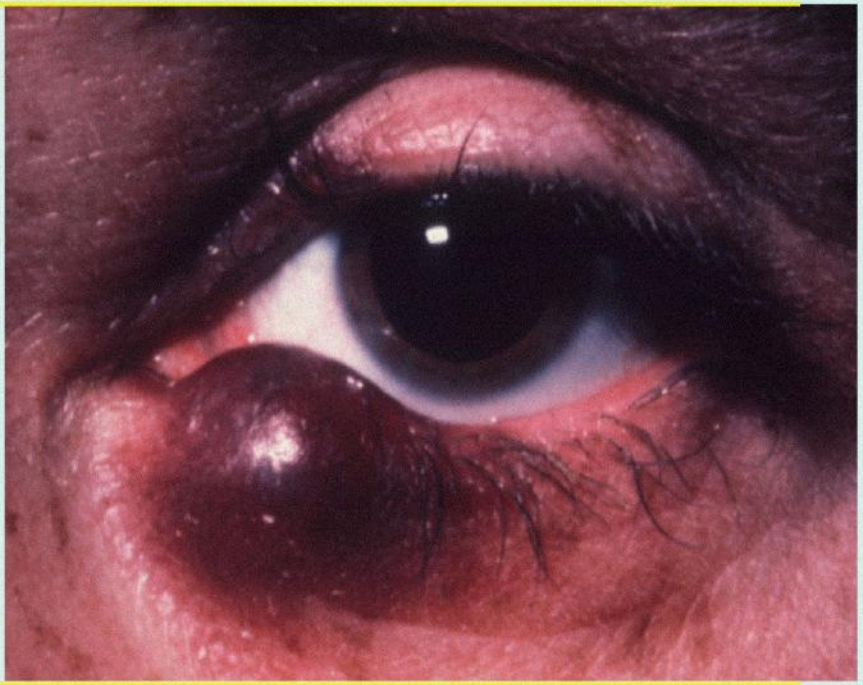


Melanoma

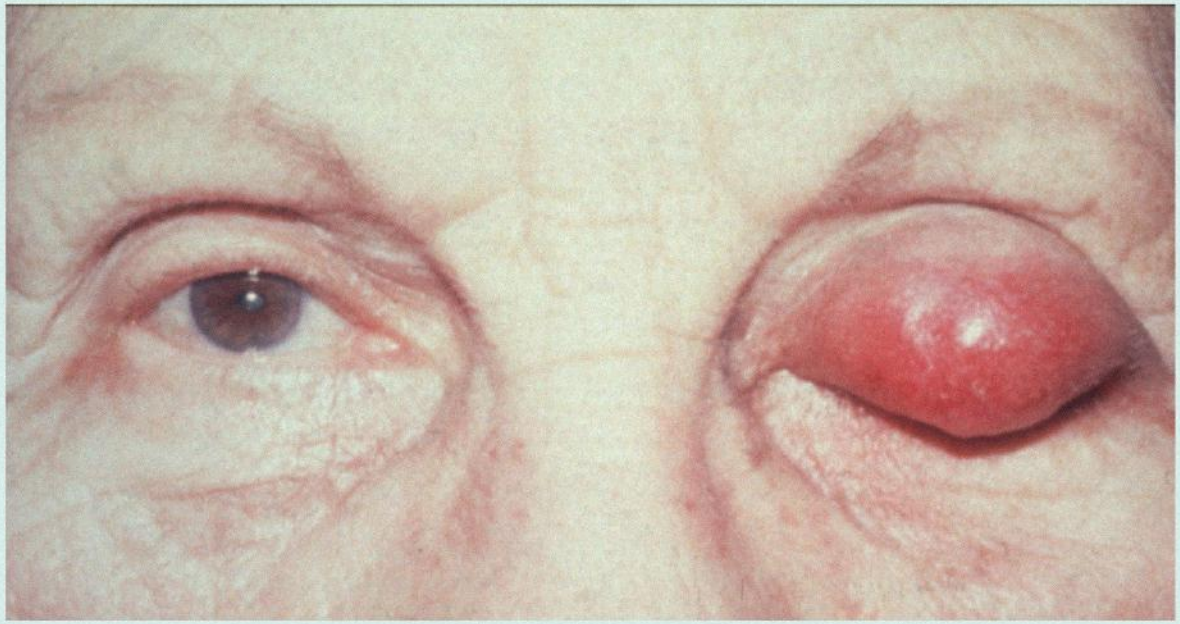
Nodular	Superficial spreading	From lentigo maligna (Hutchinson freckle)
		
• Blue-black nodule with normal surrounding skin • May be non-pigmented	• Plaque with irregular outline • Variable pigmentation	• Affects elderly • Slowly expanding pigmented macule

Kaposi sarcoma

- Vascular tumour occurring in patients with AIDS
- Usually associated with advanced disease
- Very sensitive to radiotherapy

Early	Advanced
	
Pink, red-violet lesion	May ulcerate and bleed

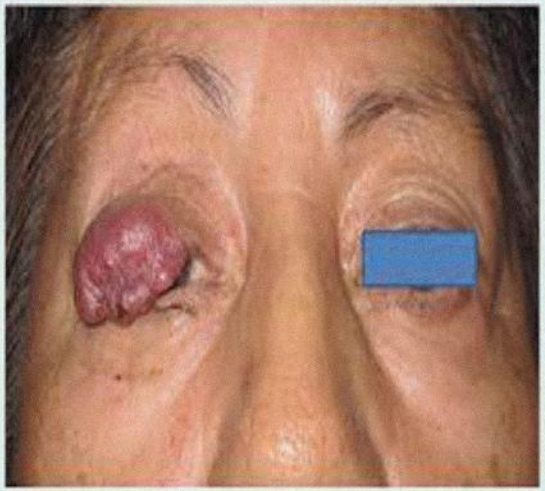
Merkel cell carcinoma



- Highly malignant with frequent metastases at presentation
- Fast-growing, violaceous, well-demarcated nodule

- Intact overlying skin
- Predilection for upper eyelid

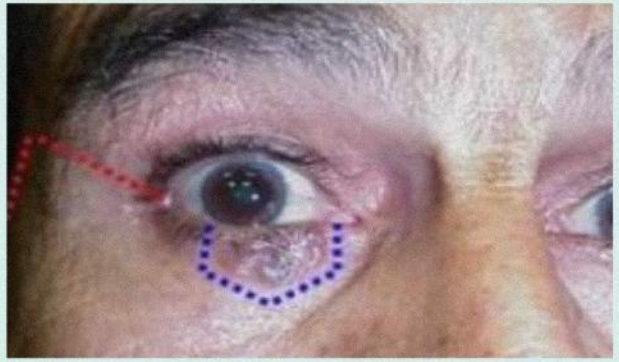
MERKEL CELL CARCINOMA



DIAGNOSIS

- ***The gold standard of diagnosis is surgical excision followed by Histopathology***

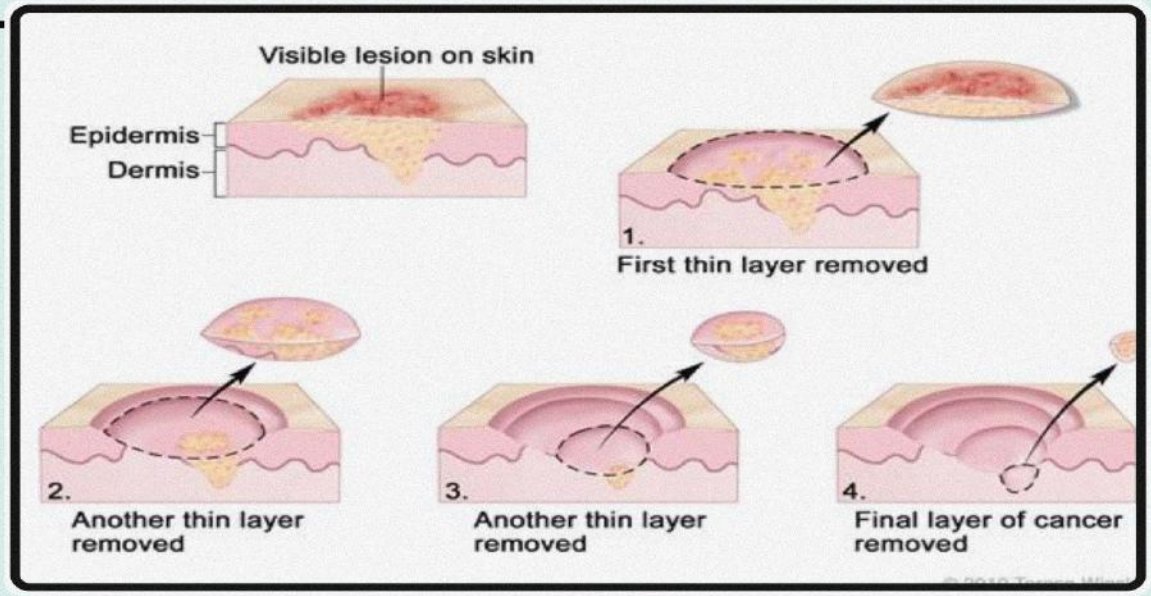
- *Surgical excision is done with 3-5mm of normal skin from the outer edge of tumor using Mohs micrographic surgery or wide surgical excision with frozen section margin control*



Mohs micrographic surgery

Involves removing a skin cancer one layer at a time and examining these layers under a microscope immediately after they are removed

This procedure allows for a close examination of each layer of skin to detect cancer cells



Management

"Ulcers lasting a year or longer cause the underlying bone to be eaten away and the resulting scars are depressed.' 'What drugs will not cure, the knife will; what the knife will not cure, the cautery will; what the cautery will not cure must be considered incurable.“

Hippocrates' book of Aphorisms **(46 BC)**

MANAGEMENT

- ***Surgery followed by reconstruction***
- ***Radiotherapy***
- ***Cryotherapy***
- ***Chemotherapeutic and immune-modulating agents***

Treatment Options

1. **Surgical excision**
   - Method of choice
2. **Radiotherapy**
   - Small BCC not involving medial canthus
   - Kaposi sarcoma
3. **Cryotherapy**
   - Small and superficial BCC irrespective of location
   - Adjunct to surgery in selected cases

Chemotherapeutic and immune modulating agents

Topical fluorouracil is approved by the FDA for the treatment of superficial BCC

The first Hh pathway inhibitor

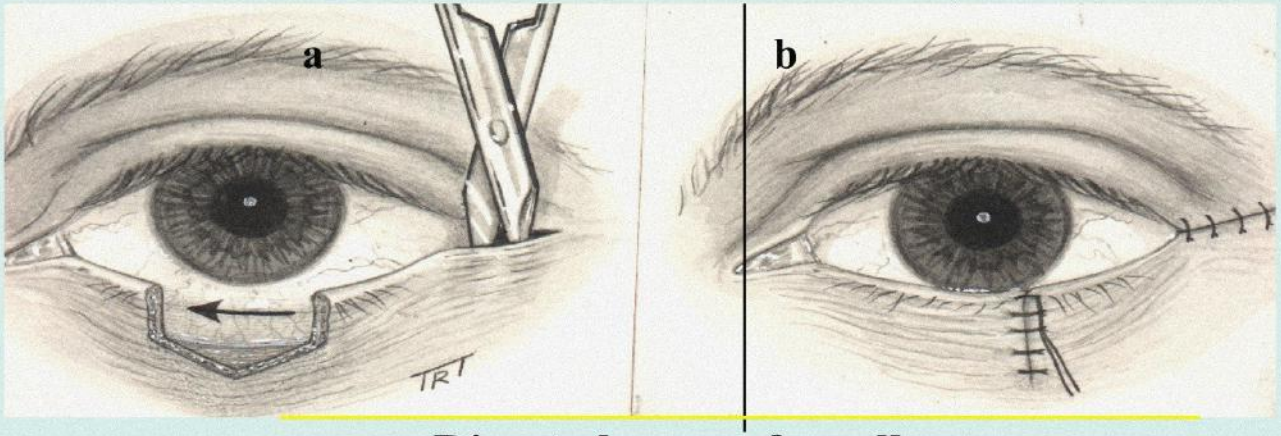
Used topically for prophylaxis or maintenance in patients who are prone to having many BCCs, likely by treating subclinical tumors especially on the trunk and extremities

SURGICAL TREATMENT

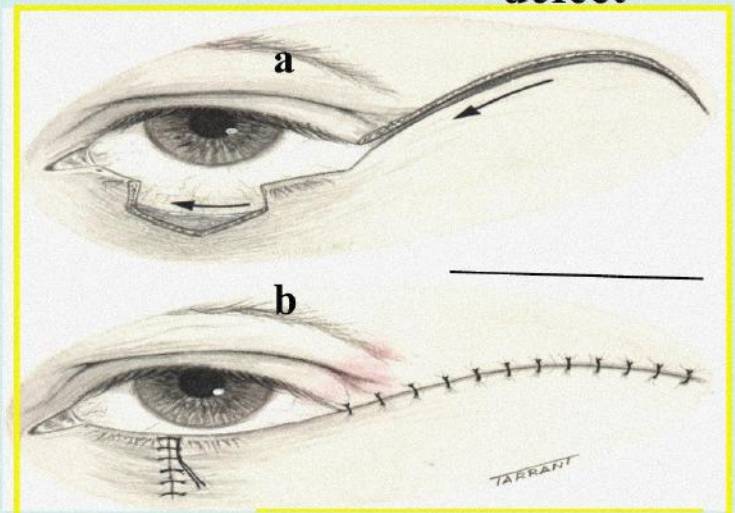
- ***Eyelid reconstruction should be carefully considered as both function and aesthetic outcome in patients are important after clear excision of tumors***

- ***Exenteration is considered in the case of extensive orbital invasion or high-risk aggressive tumors in order to reduce the rate of recurrence***

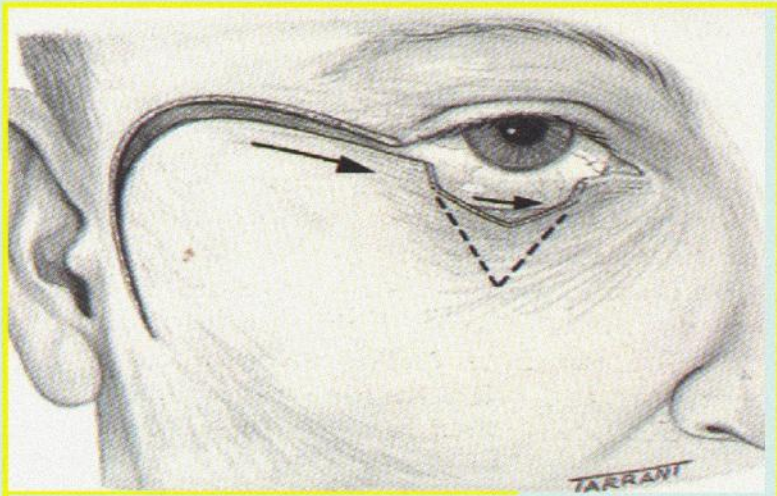
Lower eyelid reconstruction following tumour excision



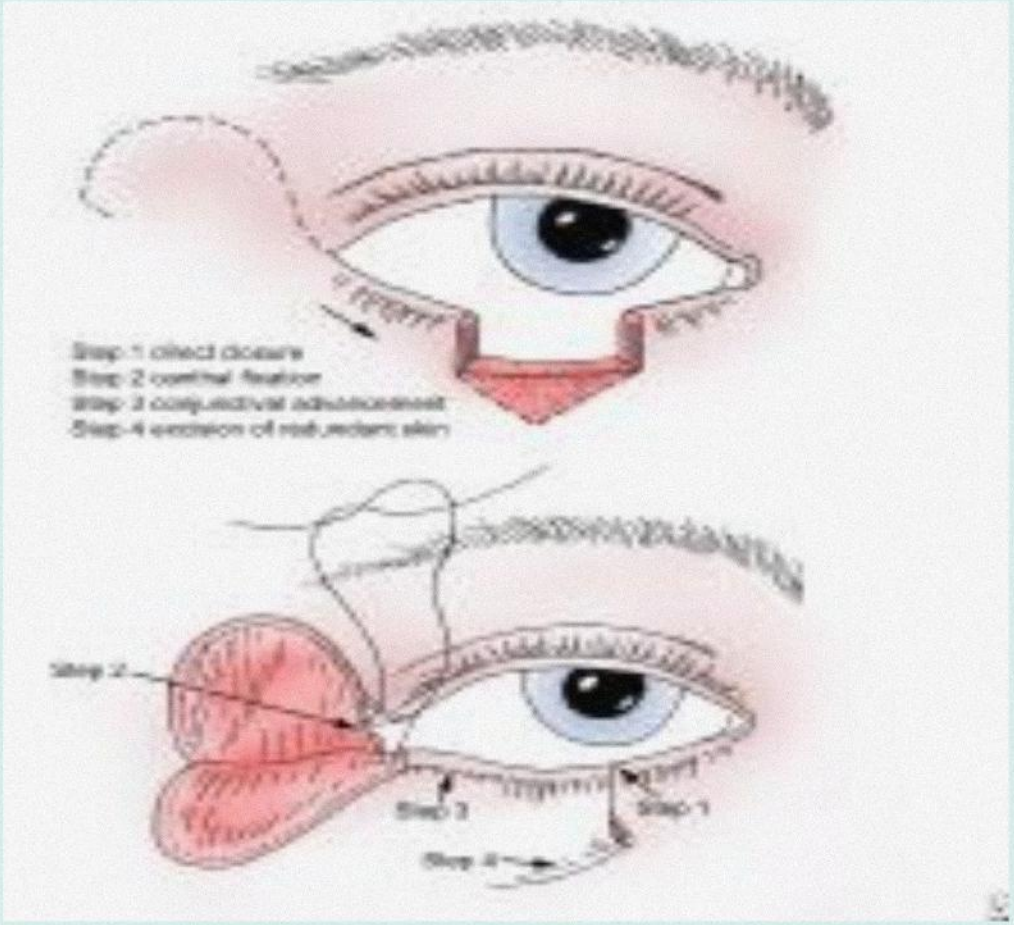
Direct closure of small defect

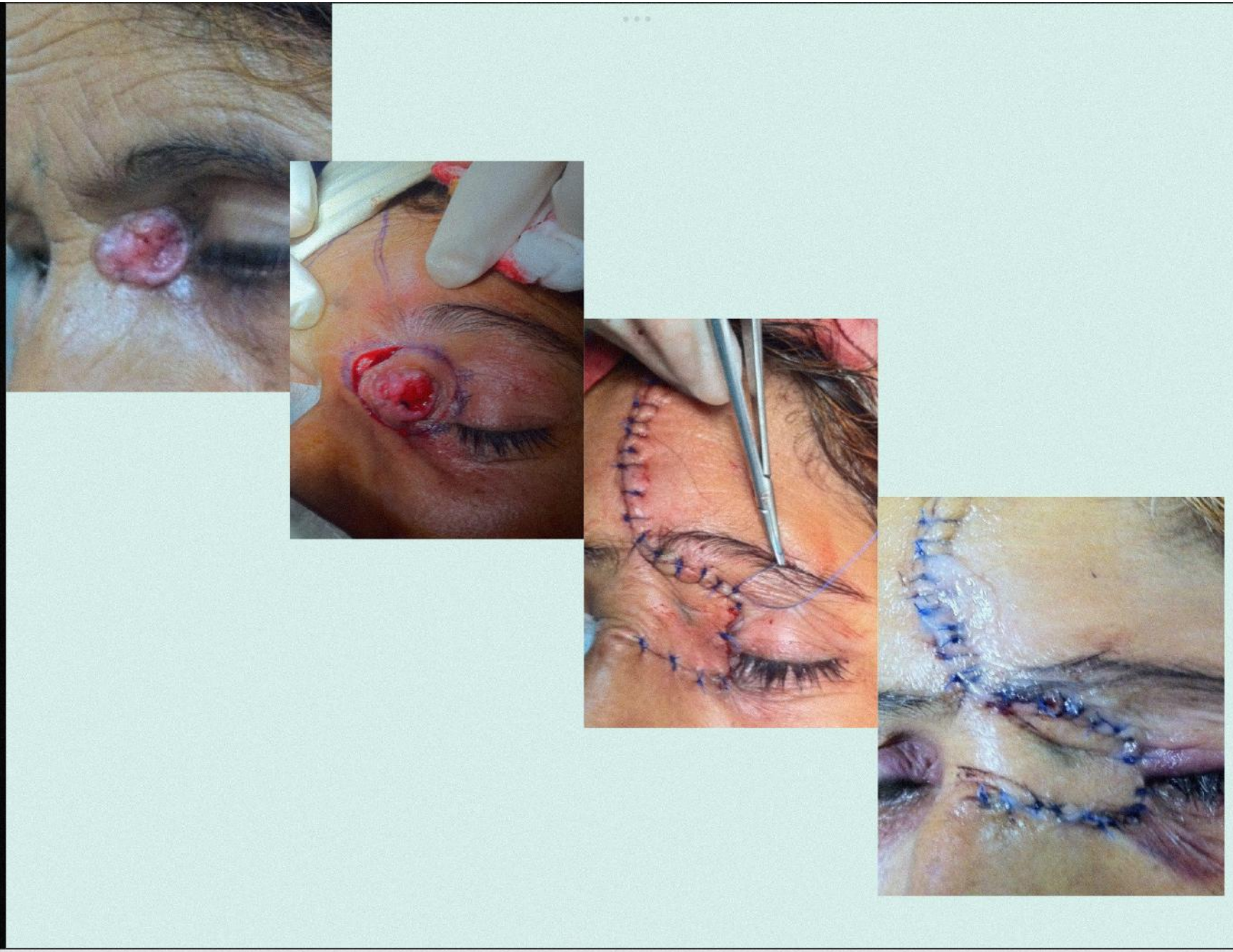


Tenzel flap for moderate

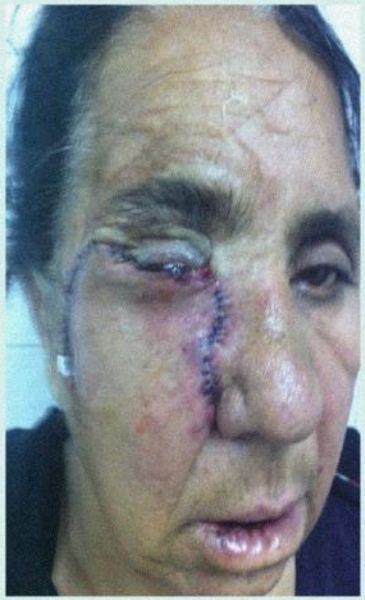


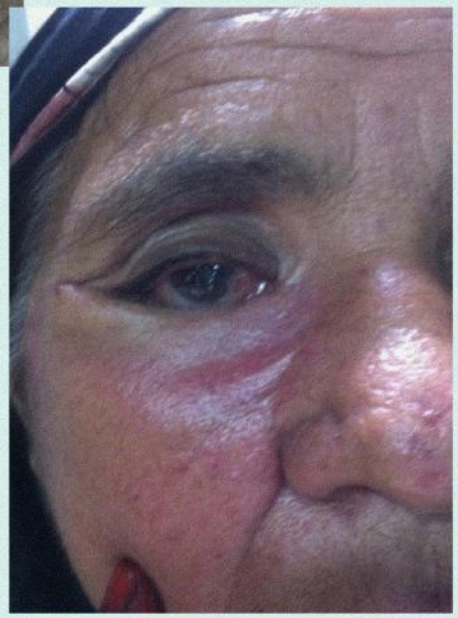
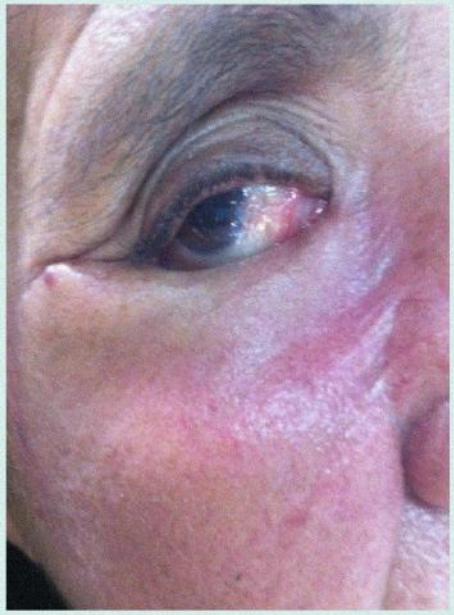
Mustarde cheek rotation flap for large defect


Step-1 direct closure
Step-2 central fixation
Step-3 conjunctival advancement
Step-4 excision of redundant skin
Step-2
Step-3
Step-1
Step-4

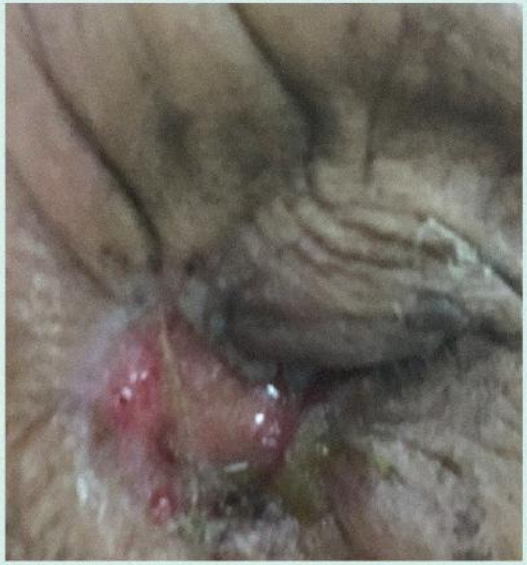


BCC and Mustarde cheek rotation flap

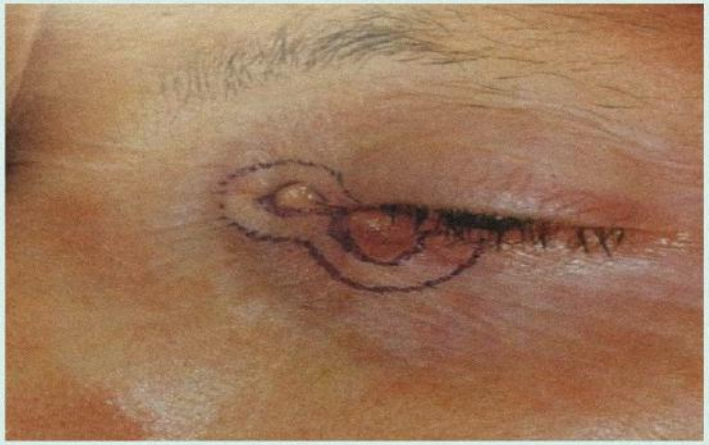


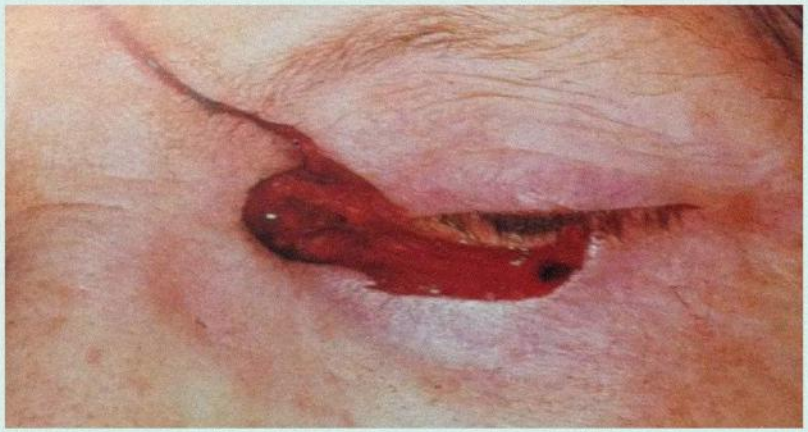



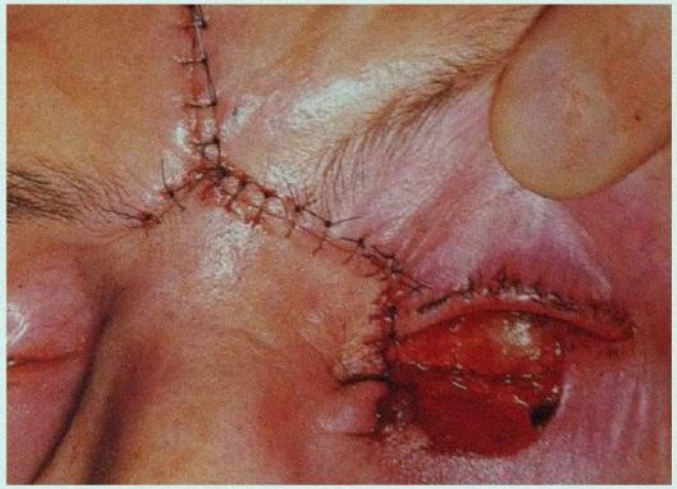
MEDIAL CANTHUS BCC AND RHOMBOID FLAP

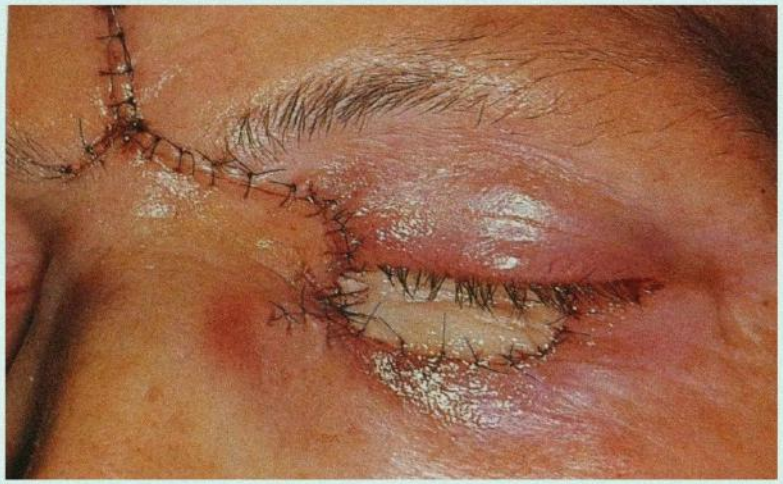


Glabellar flap and Hughes tarsconjunctival flap combined

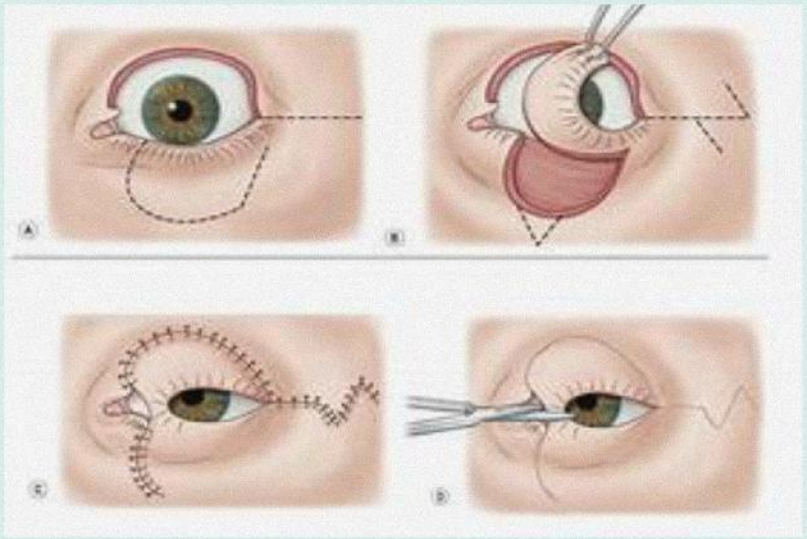


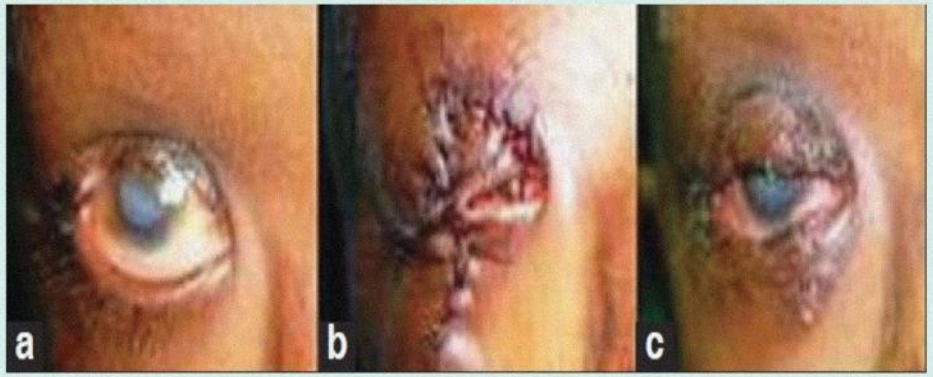




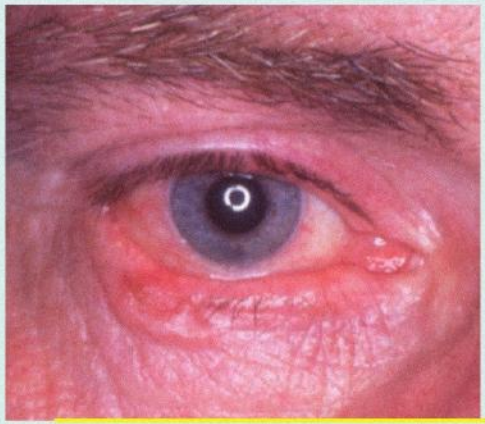


LID SWITCH FLAP

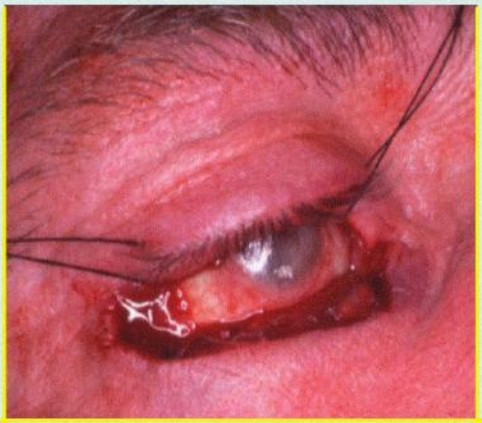




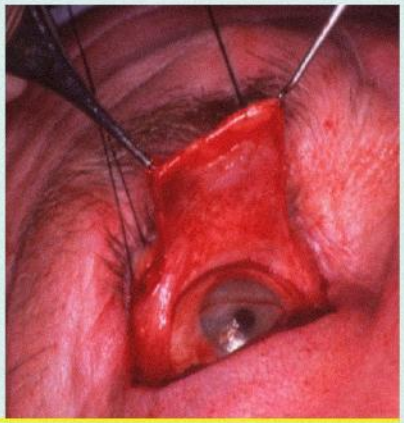
Eyelid-sharing procedure



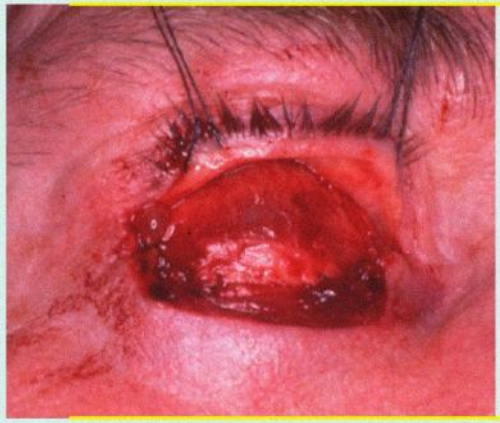
Extensive sclerosing BCC



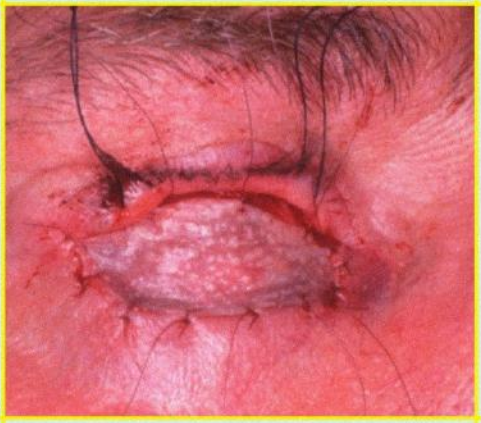
Total excision of lower lid



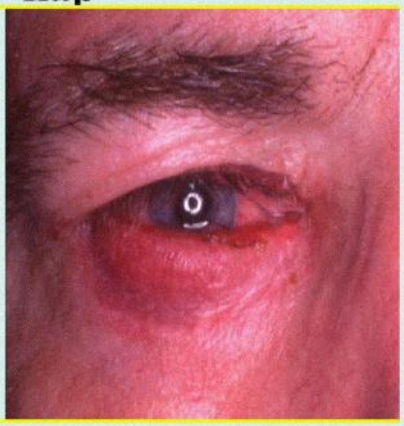
Tarsoconjunctival flap



Reconstruction of posterior lamella



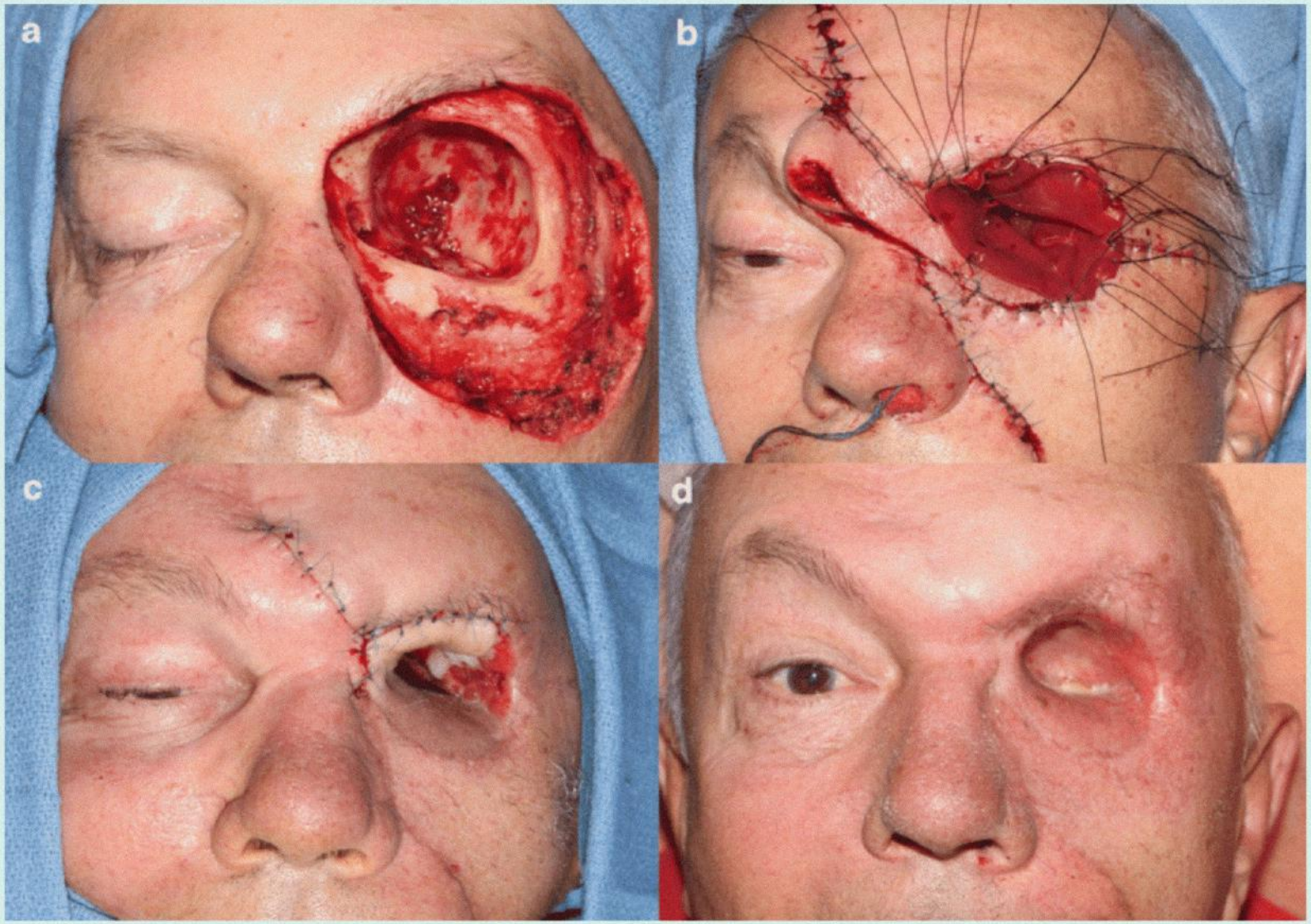
Reconstruction of anterior lamella with skin graft



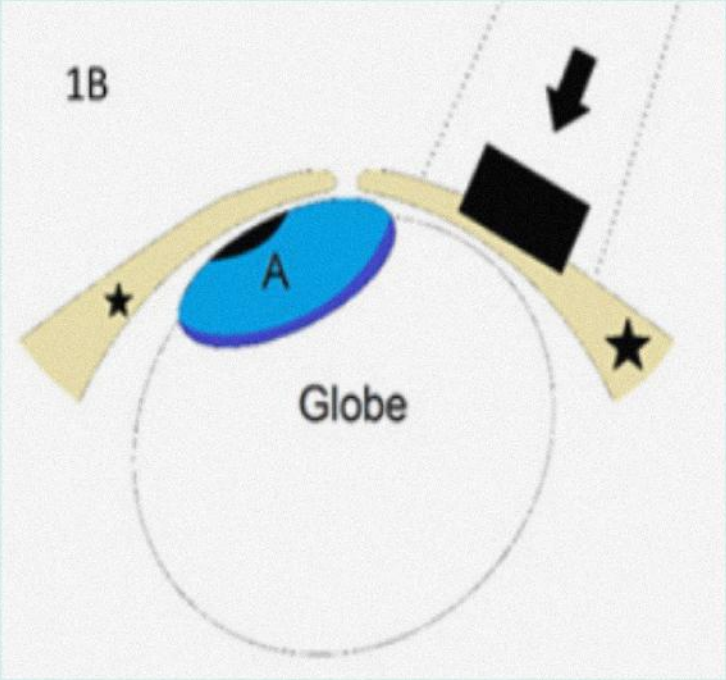
Appearance after healing

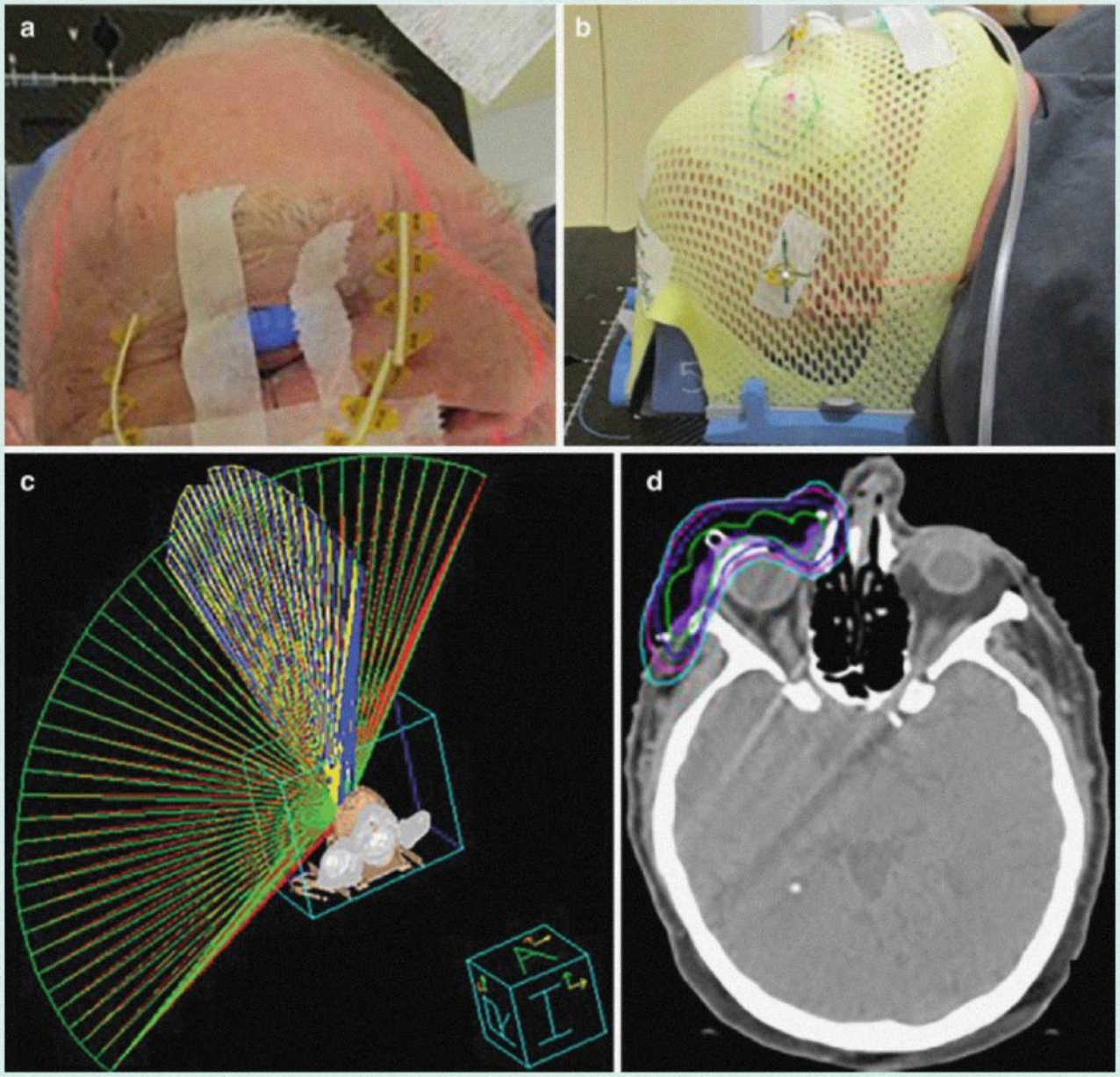
Exenteration

- a surgical procedure involving removal of the entire globe and its surrounding structures including muscles, fat, nerve
- Total and subtotal


a
b
c
d

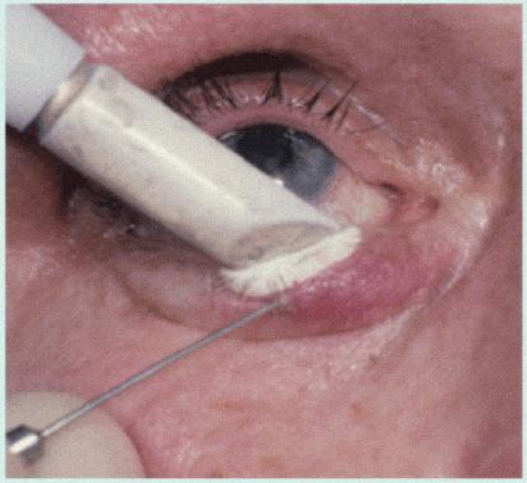
Radiotherapy for eyelid lesions

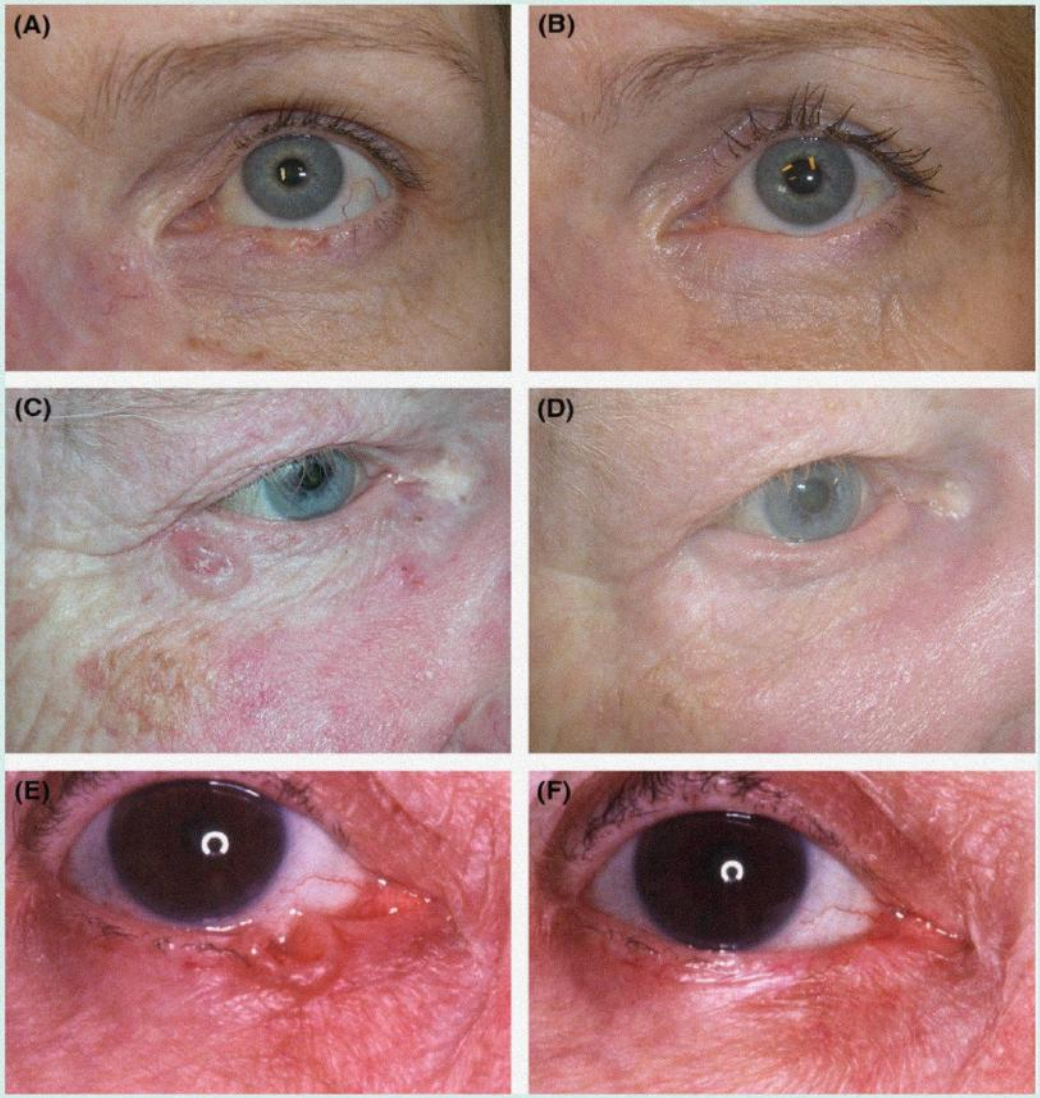



a
b
c
d

Cryotherapy

- **uses a special probe to apply very low temperatures to the eyelids**





Poor prognostic factors

Treatment history

- Recurrent tumor
- Incomplete excision
- Previous non surgical treatment

Tumor site size and location

- Size more than 2cm
- Medial canthus location
- Poorly defined margins
- Located in H zone of the face

Histological factors

- Infilterative morphea and micronodular type
- Perineural invasion

Patient factors

- immunosuppression