Conjunctival Neoplasms

Conjunctival Neoplasms

Broad category

Broad category

Broad category
Conjunctival Neoplasms

Conjunctival Neoplasms

Lymphatic

Pigmented

Epithelial

?
Conjunctival Neoplasms

- **Conjunctival Neoplasms**
  - **Lymphatic**
    - Lymphatic channel elements
    - Lymphoid cells
  - **Pigmented**
  - **Epithelial**
Conjunctival Neoplasms

Lymphatic channel-element neoplasias
1) ?
2) ?
Conjunctival Neoplasms

Lymphatic channel-element neoplasias

1) Lymphangiectasia

2) Lymphangioma
Conjunctival Neoplasms

Lymphatic channel-element neoplasias

1) Lymphangiectasia
   - Irregularly dilated lymphatic channels of bulbar conjunctiva

2) Lymphangioma
   - Proliferation of channel elements
   - Present at birth
   - Enlarge slowly
   - Intralesional hemorrhage → chocolate cyst
Conjunctival Neoplasms

Lymphatic channel-element neoplasias
1) Lymphangiectasia
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Conjunctival Neoplasms

Lymphatic

Lymphatic channel elements

Lymphoid cells
Conjunctival Neoplasms

Conjunctival lymphangiectasia

Low mag

High mag
Conjunctival Neoplasms

Lymphatic channel-element neoplasias
1) Lymphangiectasia
   - Irregularly dilated lymphatic channels of bulbar conjunctiva
2) Lymphangioma

How does lymphangiectasia appear on anterior-segment OCT (AS-OCT)?
Conjunctival Neoplasms

Lymphatic channel-element neoplasias

1) Lymphangiectasia
   - Irregularly dilated lymphatic channels of bulbar conjunctiva
2) Lymphangioma

How does lymphangiectasia appear on anterior-segment OCT (AS-OCT)?
As an elevated subepi lesion with cyst-like structures
Conjunctival Neoplasms

**Lymphangiectasia.** Slit lamp photograph reveals diffuse chemosis, dilated, tortuous conjunctival vessels and hemorrhages with ‘dot/blot’ configuration affecting the temporal, nasal and inferior bulbar conjunctiva of the right eye. Green arrows showing the locations where OCT scan was taken.  
AS-OCT: Dilated lymphatic vessels are shown as hyporeflective spaces (blue arrows) with widely varying calibers. The sclero-conjunctival interface is also easily visible in high resolution (red arrow).
Conjunctival Neoplasms

Lymphatic channel-element neoplasias
1) Lymphangiectasia
   --Irregularly dilated lymphatic channels of bulbar conjunctiva
2) Lymphangioma
   ---definition thereof

Lymphatic

Lymphoid cells

Lymphatic channel elements
Conjunctival Neoplasms

**Lymphatic channel-element neoplasias**

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Conjunctival Neoplasms

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Conjunctival Neoplasms

Conjunctival lymphangioma
Conjunctival Neoplasms

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**Conjunctival Neoplasms**

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*Similar in this regard to the another common ocular tumor*
Conjunctival Neoplasms

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Similar in this regard to the capillary hemangioma
Conjunctival Neoplasms

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Lymphatic

Conjunctival Neoplasms

Lymphoid cells

Lymphatic channel elements
Conjunctival Neoplasms

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Conjunctival Neoplasms

Conjunctival lymphangioma: Chocolate cyst
Conjunctival Neoplasms

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**Lymphoid-cell neoplasias**
1) ?

2) ?
**Conjunctival Neoplasms**

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**Lymphoid-cell neoplasias**
1) Lymphoid hyperplasia
2) Lymphoma
Conjunctival Neoplasms

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**Lymphoid-cell neoplasias**
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   --Most patients age > 50 (if younger, check for HIV)
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Conjunctival Neoplasms

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Conjunctival Neoplasms

Lymphoid hyperplasia
Conjunctival Neoplasms

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Lymphoid-cell neoplasias
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Conjunctival Neoplasms

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Conjunctival Neoplasms

Conjunctival lymphoma
**Conjunctival Neoplasms**

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Conjunctival Neoplasms

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**Conjunctival Neoplasms**

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Conjunctival Neoplasms

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Conjunctival Neoplasms

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Lymphoid-cell neoplasias
How does lymphoma appear on AS-OCT?
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Conjunctival Neoplasms

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How does lymphoma appear on AS-OCT?
As a smooth-bordered, elevated subepi lesion with a homogeneously 'stippled' appearance
Conjunctival Neoplasms

Slit lamp photograph and AS-OCT of conjunctival lymphoma.
a) Slit lamp photograph of conjunctival lymphoma.
b) On AS-OCT, there is a homogeneous, dark, hyporeflective subepithelial lesion with smooth borders and overlying thin epithelium (arrow). The lesion contains monomorphc, stippled, dot-like infiltrates corresponding to the infiltration of monoclonal lymphocytes.
Conjunctival Neoplasms

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Conjunctival Neoplasms

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Can these conditions be differentiated from one another at the slit lamp? No—this can only be done via biopsy
Conjunctival Neoplasms

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Conjunctival Neoplasms

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Conjunctival Neoplasms

**Lymphatic channel-element neoplasias**

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**Lymphoid-cell neoplasias**

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2) Lymphoma  
   --Can be localized, or manifestation of systemic disease  
   --Most patients age $>$ 50 (if younger, check for HIV)  
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*Cannot be differentiated clinically--only via biopsy*  
--Both are usually B-cells  
--Both can be mistaken for diff dz
**Conjunctival Neoplasms**

### Lymphatic channel-element neoplasias

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### Lymphoid-cell neoplasias

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---

**Cannot be differentiated clinically--only via biopsy**

--Both are usually B-cells
--Both can be mistaken for amyloid
Conjunctival Neoplasms

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   --Treatment: Localized → RT ; systemic → chemo
   --Cannot be differentiated clinically--only via biopsy
   --Both are usually B-cells
   --Both can be mistaken for amyloid
   --Because 'benign' disease can transform, get Heme-Onc consult whether the lesion is benign or malignant on biopsy

How does amyloid appear on AS-OCT?

Like lymphoma, as an elevated subepi lesion. However, its borders are irregular, not smooth; and rather than having a homogeneous 'stippled' appearance, an amyloid lesion is more heterogeneous, and contains linear infiltrates.
**Conjunctival Neoplasms**

**Lymphatic channel-element neoplasias**

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Like lymphoma, as an elevated subepi lesion
Conjunctival Neoplasms

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**Conjunctival Neoplasms**

Lymphatic

Lymphatic channel elements

Lymphoid cells

Cannot be differentiated clinically-- only via biopsy
-- Both are usually B-cells
-- Both can be mistaken for amyloid

Lymphoid-cell neoplasias
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How does amyloid appear on AS-OCT?
Like lymphoma, as an elevated subepi lesion. However, its borders are irregular, not smooth; and rather than having a homogeneous ‘stippled’ appearance, an amyloid lesion is more heterogeneous, and contains linear infiltrates.

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Conjunctival Neoplasms

Slit lamp photograph and AS-OCT of conjunctival amyloidosis.
a) Slit lamp photograph of conjunctival amyloidosis (arrow).
b) AS-OCT image of conjunctival amyloidosis showing a heterogeneous, dark subepithelial lesion with irregular borders containing hyper-reflective linear infiltrates that correspond to amyloid deposition (arrow).
Conjunctival Neoplasms

Slit lamp photograph and AS-OCT of conjunctival amyloidosis.

a) Slit lamp photograph of conjunctival amyloidosis (arrow).

b) AS-OCT image of conjunctival amyloidosis showing a heterogeneous, dark subepithelial lesion with irregular borders containing hyper-reflective linear infiltrates that correspond to amyloid deposition (arrow). Compare with the homogeneous, smooth-bordered, well-defined appearance of a conj lymphoma (top).
Conjunctival Neoplasms

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Cannot be differentiated clinically--only via biopsy
--Both are usually B-cells
--Both can be mistaken for amyloid
--Because ‘benign’ disease can transform, get Heme-Onc consult whether the lesion is benign or malignant on biopsy!
Conjunctival Neoplasms

- Lymphatic
- Pigmented
- Epithelial

50
Conjunctival Neoplasms

- Lymphatic
- Pigmented
  - Benign
  - Premalignant
  - Malignant
- Epithelial
Conjunctival Neoplasms

- Benign
  1) Complexion-associated melanosis
  2) Nevus
     -- Is a hamartoma
     -- Progress from junctional → compound → subepithelial
     -- 1/2 contain epithelial inclusion cysts
     -- Goblet cells in cyst secrete mucin → lesion enlarges → false impression of malignant transformation
     -- Rapid enlargement during teens common, not worrisome for malignant change

Conjunctival Neoplasms

Pigmented

Benign

Premalignant

Malignant
**Conjunctival Neoplasms**

- **Benign**
  1) Freckle (ephelis)
  2) Complexion-associated melanosis
  3) Nevus
Benign
1) Freckle (ephelis)
2) Complexion-associated melanosis

Freckles and CAM share what histologic quality?

Conjunctival Neoplasms

Pigmented

Premalignant

Malignant
**Conjunctival Neoplasms**

**Benign**
1) Freckle (ephelis)
2) Complexion-associated melanosis

Freckles *and* CAM *share what histologic quality?*
Both arise from melanocytes located within the epithelium
Conjunctival Neoplasms

Benign
1) Freckle (ephelis)
2) Complexion-associated melanosis

CAM is known by several other names—what are they?
--?
--?
--?
--?
--?
--?
Conjunctival Neoplasms

**Benign**
1) Freckle (ephelis)
2) Complexion-associated melanosis

---

CAM is known by several other names—what are they?
--Racial melanosis
--Benign acquired melanosis
--Benign epithelial melanosis
--Primary conjunctival melanosis
--Acquired hypermelanosis
Conjunctival Neoplasms

**Benign**
1) Freckle (ephelis)
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3) Nevus

Who is prone to developing CAM?

- It can arise in any racial group, but is more commonly associated with more darkly pigmented peoples.
- The perilimbal region
- Bilateral (and fairly symmetrically so)
- The caruncle
- The cornea

What is its malignant potential?
- Essentially none
Conjunctival Neoplasms

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Conjunctival Neoplasms

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Who is prone to developing CAM?
It can arise in any racial group, but is commonly associated with more darkly pigmented peoples

At what age does it first appear?

Essentially none

At what age does it first appear?
Young adulthood, although it often progresses with advancing age
Conjunctival Neoplasms

**Benign**
1) Freckle (ephelis)
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*Who is prone to developing CAM?*
It can arise in any racial group, but is commonly associated with more darkly pigmented peoples

*At what age does it first appear?*
Young adulthood, although it often progresses with advancing age
Conjunctival Neoplasms

**Benign**
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Who is prone to developing CAM? It can arise in any racial group, but is commonly associated with more darkly pigmented peoples

Which portion of the conj is most likely to be involved?

 Conjunctival Neoplasms

Pigmented
Conjunctival Neoplasms

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**Which portion of the conj is most likely to be involved?**
The perilimbal region

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**Conjunctival Neoplasms**

**Pigmented**
Conjunctival Neoplasms

CAM: Perilimbal involvement
Conjunctival Neoplasms

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Who is prone to developing CAM?
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Which portion of the conj is most likely to be involved?
The perilimbal region

Upon close inspection, CAM lesions often exhibit a subtle but distinctive pattern—what is it?
Conjunctival Neoplasms

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The perilimbal region

*Upon close inspection, CAM lesions often exhibit a subtle but distinctive pattern—what is it?*
‘Microfolds’ (see the next slide)
Conjunctival Neoplasms

Complexion-associated melanosis. Slit-lamp photograph of a 73-year-old Black man that demonstrates conjunctival pigmentation with limbal “microfolds” [inset].
Conjunctival Neoplasms

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Who is prone to developing CAM?
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Which portion of the conj is most likely to be involved?
The perilimbal region

Does it present in unilateral, or bilateral fashion?

Conjunctival Neoplasms

Pigmented
Conjunctival Neoplasms

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Does it present in unilateral, or bilateral fashion?
Bilateral (and fairly symmetrically so)
Conjunctival Neoplasms

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Which portion of the conj is most likely to be involved?
The perilimbal region

Does it present in unilateral, or bilateral fashion?
Bilateral (and fairly symmetrically so)

Can the palpebral conj be involved?
Benign
1) Freckle (ephelis)
2) Complexion-associated melanosis
3) Nevus

Who is prone to developing CAM?
It can arise in any racial group, but is commonly associated with more darkly pigmented peoples

Which portion of the conj is most likely to be involved?
The perilimbal region

Does it present in unilateral, or bilateral fashion?
Bilateral (and fairly symmetrically so)

Can the palpebral conj be involved?
Yes
Conjunctival Neoplasms

Benign
1) Freckle (ephelis)
2) Complexion-associated melanosis
3) Nevus

Who is prone to developing CAM?
It can arise in any racial group, but is commonly associated with more darkly pigmented peoples

Which portion of the conj is most likely to be involved?
The perilimbal region

Does it present in unilateral, or bilateral fashion?
Bilateral (and fairly symmetrically so)

Can the palpebral conj be involved? The caruncle?
Yes.
Conjunctival Neoplasms

Benign
1) Freckle (ephelis)
2) Complexion-associated melanosis
3) Nevus

Who is prone to developing CAM?
It can arise in any racial group, but is commonly associated with more darkly pigmented peoples

Which portion of the conj is most likely to be involved?
The perilimbal region

Does it present in unilateral, or bilateral fashion?
Bilateral (and fairly symmetrically so)

Can the palpebral conj be involved? The caruncle?
Yes. Yes.
Conjunctival Neoplasms

**Benign**
1) Freckle (ephelis)
2) Complexion-associated melanosis
3) Nevus

Who is prone to developing CAM?
It can arise in any racial group, but is commonly associated with more darkly pigmented peoples

Which portion of the conj is most likely to be involved?
The perilimbal region

Does it present in unilateral, or bilateral fashion?
Bilateral (and fairly symmetrically so)

Can the palpebral conj be involved? The caruncle? The cornea??!!
Yes. Yes.
Conjunctival Neoplasms

**Benign**
1) Freckle (ephelis)
2) Complexion-associated melanosis
3) Nevus

---

**Pigmented**

- Who is prone to developing CAM?
  It can arise in any racial group, but is commonly associated with more darkly pigmented peoples

- Which portion of the conj is most likely to be involved?
  The perilimbal region

- Does it present in unilateral, or bilateral fashion?
  Bilateral (and fairly symmetrically so)

- Can the palpebral conj be involved? The caruncle? The cornea??!!
  Yes. Yes. Yes—it’s called **two words**
Conjunctival Neoplasms

**Benign**
1) Freckle (ephelis)
2) Complexion-associated melanosis
3) Nevus

Who is prone to developing CAM?
It can arise in any racial group, but is commonly associated with more darkly pigmented peoples

Which portion of the conj is most likely to be involved?
The perilimbal region

Does it present in unilateral, or bilateral fashion?
Bilateral (and fairly symmetrically so)

Can the palpebral conj be involved? The caruncle? The cornea??!!
Yes. Yes. Yes—it’s called striate melanokeratosis.
Conjunctival Neoplasms

CAM: Striate melanokeratosis
Conjunctival Neoplasms

**Benign**
1) Freckle (ephelis)
2) Complexion-associated melanosis
3) Nevus

Who is prone to developing CAM?
It can arise in any racial group, but is commonly associated with more darkly pigmented peoples

Which portion of the conj is most likely to be involved?
The perilimbal region

Does it present in unilateral, or bilateral fashion?
Bilateral (and fairly symmetrically so)

Can the palpebral conj be involved? The caruncle? The cornea??!!
Yes. Yes. Yes—it’s called *striate melanokeratosis.*

What is its malignant potential?
Conjunctival Neoplasms

Benign
1) Freckle (ephelis)
2) Complexion-associated melanosis
3) Nevus

Who is prone to developing CAM?
It can arise in any racial group, but is commonly associated with more darkly pigmented peoples

Which portion of the conj is most likely to be involved?
The perilimbal region

Does it present in unilateral, or bilateral fashion?
Bilateral (and fairly symmetrically so)

Can the palpebral conj be involved? The caruncle? The cornea??!!
Yes. Yes. Yes—it’s called striate melanokeratosis.

What is its malignant potential?
Essentially none
**Conjunctival Neoplasms**

**Benign**
1) Freckle (ephelis)
2) Complexion-associated melanosis
3) Nevus

Who is prone to developing CAM?
It can arise in any racial group, but is commonly associated with more darkly pigmented peoples

Which portion of the conj is most likely to be involved?
The perilimbal region

Does it present in unilateral, or bilateral fashion?
Bilateral (and fairly symmetrically so)

Can the palpebral conj be involved? The caruncle? The cornea??!!
Yes. Yes. Yes—it's called striate melanokeratosis.

What is its malignant potential?
Essentially none

There's a simple, commonsense reason why these highly pigmented lesions have essentially no malignant potential. What is it?

It's because the increased pigment in CAM stems not from a proliferation of melanocytes (with its attendant risk of malignant transformation), but rather from an increase in rate of melanin synthesis and transfer to adjacent basal epithelial cells.
Conjunctival Neoplasms

**Benign**
1) Freckle (ephelis)
2) Complexion-associated melanosis
3) Nevus

- Is a hamartoma
- Progress from junctional → compound → subepithelial
- 1/2 contain epithelial inclusion cysts
- Goblet cells in cyst secrete mucin → lesion enlarges → false impression of malignant transformation
- Rapid enlargement during teens common, not worrisome for malignant change

Conjunctival Neoplasms

Pigmented

**Who is prone to developing CAM?**
It can arise in any racial group, but is commonly associated with more darkly pigmented peoples

**Which portion of the conj is most likely to be involved?**
The perilimbal region

**Does it present in unilateral, or bilateral fashion?**
Bilateral (and fairly symmetrically so)

**Can the palpebral conj be involved? The caruncle? The cornea**
Yes. Yes. Yes—it's called **striate melanokeratosis**.

**What is its malignant potential?**
Essentially none

There’s a simple, commonsense reason why these highly pigmented lesions have essentially no malignant potential. What is it?
It’s because the increased pigment in CAM stems **not** from a proliferation of melanocytes (with its attendant risk of malignant transformation), but rather from an increase in rate of melanin synthesis and transfer to adjacent basal epithelial cells

Yes. Yes. Yes—it’s called **striate melanokeratosis**.
Complexion-associated melanosis. A, Clinical appearance. B, Histologic examination shows a normal density of small, morphologically unremarkable melanocytes confined mainly to the basal layer of the epithelium (arrows) with variable extension of pigment into more superficial epithelial layers. CAM
**Conjunctival Neoplasms**

**Benign**
1) Freckle (ephelis)
2) Complexion-associated melanosis
3) Nevus

---

*In what fundamental way does the histology of a nevus differ from that of freckles and CAM?*

- Nevus derive from nevus cells, whereas freckles and CAM derive from melanocytes.
  - Nevus cells are round and not dendritic in shape.
  - They tend to cluster in groups called 'nests'.
  - Rapid enlargement during teens is common, not worrisome for malignant change.

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**Pigmented**

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**Conjunctival Neoplasms**
Conjunctival Neoplasms

**Benign**
1) Freckle (ephelis)
2) Complexion-associated melanosis
3) Nevus

In what fundamental way does the histology of a nevus differ from that of freckles and CAM? Whereas freckles and CAM derive from melanocytes, nevi derive from nevus cells.
Conjunctival Neoplasms

**Benign**
1) Freckle (ephelis)
2) Complexion-associated melanosis
3) Nevus

*In what fundamental way does the histology of a nevus differ from that of freckles and CAM? Where freckles and CAM derive from melanocytes, nevi derive from nevus cells*

*What’s the difference between melanocytes and nevus cells?*
**Benign**
1) Freckle (ephelis)
2) Complexion-associated melanosis
3) Nevus

---

**Conjunctival Neoplasms**

**Pigmented**

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**In what fundamental way does the histology of a nevus differ from that of freckles and CAM?**
Whereas freckles and CAM derive from melanocytes, nevi derive from nevus cells

**What’s the difference between melanocytes and nevus cells?**
It’s pretty subtle. Nevus cells are a subpopulation of melanocytes that differ from non-nevus melanocytes in that:
-- They are round (not dendritic in shape like other melanocytes)
-- They tend to cluster in nests (the fancy term for such a nest is theque)
Conjunctival Neoplasms

**Benign**
1) Freckle (ephelis)
2) Complexion-associated melanosis
3) Nevus

In what fundamental way does the histology of a nevus differ from that of freckles and CAM? Whereas freckles and CAM derive from melanocytes, nevi derive from nevus cells.

What's the difference between melanocytes and nevus cells? It's pretty subtle. Nevus cells are a subpopulation of melanocytes that differ from non-nevus melanocytes in that:
--They are round (not dendritic in shape like other melanocytes)
--They tend to cluster in nests (the fancy term for such a nest is *theque*)
Conjunctival Neoplasms

A, Clinical appearance with characteristic cystic areas (arrows).

B, Histologically, the nevus cells have round, oval, or pear-shaped nuclei with a moderate amount of cytoplasm, mostly arranged in nests (arrowheads).
Conjunctival Neoplasms

**Benign**

1) Freckle (ephelis)
2) Complexion-associated melanosis
3) Nevus
   --Is a hamar- vs choristoma

**Pigmented**

**Premalignant**

**Malignant**
Conjunctival Neoplasms

**Benign**
1) Freckle (ephelis)
2) Complexion-associated melanosis
3) Nevus
   --Is a hamartoma
Conjunctival Neoplasms

**Benign**
1) Freckle (ephelis)
2) Complexion-associated melanosis
3) Nevus
   --Is a hamartoma
   --Progress from \(\text{location} \rightarrow \text{nevus} \rightarrow \text{location} \rightarrow \text{nevus}\)

**Pigmented**

**Premalignant**

**Malignant**
**Conjunctival Neoplasms**

**Benign**
1) Freckle (ephelis)
2) Complexion-associated melanosis
3) Nevus
   --Is a hamartoma
   --Progress from *junctional* nevus → *compound* nevus → *subepithelial* nevus

**Pigmented**

**Premalignant**

**Malignant**
Conjunctival Neoplasms

A, Clinical appearance with characteristic cystic areas (arrows). B, Histologically, the nevus cells have round, oval, or pear-shaped nuclei with a moderate amount of cytoplasm, mostly arranged in nests (arrowheads). Nevus cells are also present at the epithelial–stromal junction (arrow); hence, this is a compound nevus.
**Conjunctival Neoplasms**

**Benign**
1) Freckle (ephelis)
2) Complexion-associated melanosis
3) Nevus
   --Is a hamartoma
   --Progress from *junctional* nevus → *compound* nevus → *subepithelial* nevus
   --1/2 contain epithelial inclusion cysts
   --Goblet cells in cyst secrete mucin
   --Lesion enlarges → false impression of malignant transformation
   --Rapid enlargement during teens common, not worrisome for malignant change

**Premalignant**

**Malignant**
**Conjunctival Neoplasms**

**Benign**
1) Freckle (ephelis)
2) Complexion-associated melanosis
3) Nevus
   --Is a hamartoma
   --Progress from *junctional* nevus → *compound* nevus → *subepithelial* nevus
   --1/2 contain epithelial inclusion cysts

**Premalignant**

**Malignant**

-Go to *subepithelial* nevus
-1/2 contain epithelial inclusion cysts
Conjunctival Neoplasms

A, Clinical appearance with characteristic cystic areas (arrows). B, Histologically, the nevus cells have round, oval, or pear-shaped nuclei with a moderate amount of cytoplasm, mostly arranged in nests (arrowheads). Nevus cells are also present at the epithelial–stromal junction (arrow); hence, this is a compound nevus. **Note the epithelial inclusion cysts (asterisks) within the lesion, correlating with the clinical appearance.**

Conj nevus
Conjunctival Neoplasms

Conj nevus: Epithelial inclusion cysts on AS-OCT
**Conjunctival Neoplasms**

**Benign**
1) Freckle (ephelis)
2) Complexion-associated melanosis
3) Nevus
   -- Is a hamartoma
   -- Progress from *junctional* nevus → *compound* nevus → *subepithelial* nevus
   -- 1/2 contain epithelial inclusion cysts
   -- Goblet cells in cyst secrete *stuff* → lesion enlarges → false impression of bad thing
Conjunctival Neoplasms

**Benign**
1) Freckle (ephelis)
2) Complexion-associated melanosis
3) Nevus
   --Is a hamartoma
   --Progress from *junctional* nevus → *compound* nevus → *subepithelial* nevus
   --1/2 contain epithelial inclusion cysts
   --Goblet cells in cyst secrete mucin → lesion enlarges → false impression of malignant transformation
**Benign**
1) Freckle (ephelis)
2) Complexion-associated melanosis
3) Nevus
   -- Is a hamartoma
   -- Progress from *junctional* nevus → *compound* nevus → *subepithelial* nevus
   -- 1/2 contain epithelial inclusion cysts
   -- Goblet cells in cyst secrete mucin → lesion enlarges → false impression of malignant transformation
   -- Rapid enlargement during teens is/wasn’t worrisome for malignant change
**Conjunctival Neoplasms**

**Benign**
1) Freckle (ephelis)
2) Complexion-associated melanosis
3) Nevus
   --Is a hamartoma
   --Progress from *junctional* nevus → *compound* nevus → *subepithelial* nevus
   --1/2 contain epithelial inclusion cysts
   --Goblet cells in cyst secrete mucin → lesion enlarges → false impression of malignant transformation
   --Rapid enlargement during teens common, not worrisome for malignant change
Conjunctival Neoplasms

**Benign**
1) Freckle (ephelis)
2) Complexion-associated melanosis
3) Nevus
   -- Is a hamartoma
   -- Progress from *junctional* nevus → *compound* nevus → *subepithelial* nevus
   -- 1/2 contain epithelial inclusion cysts
   -- Goblet cells in cyst secrete mucin → lesion enlarges → false impression of malignant transformation
   -- Rapid enlargement during *teens* common, not worrisome for malignant change

*Enlargement during another life-event is also common and not a harbinger of malignant transformation. What is this other life-event?*
Conjunctival Neoplasms

**Benign**
1) Freckle (ephelis)
2) Complexion-associated melanosis
3) Nevus
   -- Is a hamartoma
   -- Progress from *junctional* nevus → *compound* nevus → *subepithelial* nevus
   -- 1/2 contain epithelial inclusion cysts
   -- Goblet cells in cyst secrete mucin → lesion enlarges → false impression of malignant transformation
   -- Rapid enlargement during teens common, not worrisome for malignant change

**Premalignant**

**Malignant**

*Enlargement during another life-event is also common and not a harbinger of malignant transformation. What is this other life-event? Pregnancy*
Conjunctival Neoplasms

**Benign**
1) Freckle (ephelis)
2) Complexion-associated melanosis
3) Nevus
   --Is a hamartoma
   --Progress from *junctional* nevus → *compound* nevus → *subepithelial* nevus
   --1/2 contain epithelial inclusion cysts
   --Goblet cells in cyst secrete mucin → lesion enlarges → false impression of malignant transformation
   --Rapid enlargement during teens common, not worrisome for malignant change

**Pigmented**

**Premalignant**

During what period of life do conj nevi typically appear?

*During what period of life do conj nevi typically appear?*

*The first or second decade*

*In what three locations are they most commonly found?*

--Juxtalimbal
--Plica
--Caruncle

*Are they usually unilateral, or bilateral?*

Unilateral

*Can they be nonpigmented?*

Yes—about 1/3 are nearly devoid of pigment

*Do conj nevi carry a risk of malignant transformation?*

Yes, albeit a small one (<1%)
Conjunctival Neoplasms

Benign
1) Freckle (ephelis)
2) Complexion-associated melanosis
3) Nevus
   --Is a hamartoma
   --Progress from junctional nevus → compound nevus → subepithelial nevus
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During what period of life do conj nevi typically appear?
The first or second decade

Pigmented
Premalignant
Malignant
Conjunctival Neoplasms

Benign
1) Freckle (ephelis)
2) Complexion-associated melanosis
3) Nevus
   --Is a hamartoma
   --Progress from junctional nevus → compound nevus → subepithelial nevus
   --1/2 contain epithelial inclusion cysts
   --Goblet cells in cyst secrete mucin → lesion enlarges → false impression of malignant transformation
   --Rapid enlargement during teens common, not worrisome for malignant change

During what period of life do conj nevi typically appear?
The first or second decade

In what three locations are they most commonly found?
-- Caruncle

Premalignant

Conjunctival Neoplasms

Malignant

Yes, albeit a small one (<1%)
Conjunctival Neoplasms

Benign
1) Freckle (ephelis)
2) Complexion-associated melanosis
3) Nevus
   --Is a hamartoma
   --Progress from *junctial* nevus → *compound* nevus → *subepithelial* nevus
   --1/2 contain *epithelial inclusion* cysts
   --Goblet cells in cyst secrete *mucin* → lesion enlarges → false impression of malignant transformation
   --Rapid enlargement during teens common, not worrisome for malignant change

During what period of life do conj nevi typically appear?
The first or second decade

In what three locations are they most commonly found?
--Juxtalimbal
--Plica
--Caruncle

Pigmented
Premalignant
Malignant
Conjunctival Neoplasms

Conjunctival nevus: Typical locations

Juxtalimbal

Plica

Caruncle
Conjunctival Neoplasms

**Benign**
1) Freckle (ephelis)
2) Complexion-associated melanosis
3) Nevus
   --Is a hamartoma
   --Progress from *junctional* nevus → *compound* nevus → *subepithelial* nevus
   --1/2 contain epithelial inclusion cysts
   --Goblet cells in cyst secrete mucin → lesion enlarges → false impression of malignant transformation
   --Rapid enlargement during teens common, not worrisome for malignant change

**Pigmented**

*During what period of life do conj nevi typically appear?*
The first or second decade

*In what three locations are they most commonly found?*
--Juxtalimbal
--Plica
--Caruncle

*Are they usually unilateral, or bilateral?*

---

During what period of life do conj nevi typically appear? The first or second decade

In what three locations are they most commonly found? Juxtalimbal, Plica, Caruncle

Are they usually unilateral, or bilateral?
Conjunctival Neoplasms

**Benign**
1) Freckle (ephelis)
2) Complexion-associated melanosis
3) Nevus
   --Is a hamartoma
   --Progress from *junctional* nevus → *compound* nevus → *subepithelial* nevus
   --1/2 contain epithelial inclusion cysts
   --Goblet cells in cyst secrete mucin → lesion enlarges → false impression of malignant transformation
   --Rapid enlargement during teens common, not worrisome for malignant change

---

**Pigmented**

During what period of life do conj nevi typically appear?
The first or second decade

In what three locations are they most commonly found?
--Juxtalimbal
--Plica
--Caruncle

Are they usually unilateral, or bilateral?
Unilateral

---

*During what period of life do conj nevi typically appear?*
*The first or second decade*

*In what three locations are they most commonly found?*
*--Juxtalimbal
--Plica
--Caruncle*

*Are they usually unilateral, or bilateral?*
*Unilateral*
Benign
1) Freckle (ephelis)
2) Complexion-associated melanosis
3) Nevus
   --Is a hamartoma
   --Progress from junctional nevus → compound nevus → subepithelial nevus
   --1/2 contain epithelial inclusion cysts
   --Goblet cells in cyst secrete mucin → lesion enlarges → false impression of malignant transformation
   --Rapid enlargement during teens common, not worrisome for malignant change

During what period of life do conj nevi typically appear?
The first or second decade

In what three locations are they most commonly found?
--Juxtalimbal
--Plica
--Caruncle

Are they usually unilateral, or bilateral?
Unilateral

Can they be nonpigmented?

 Conjunctival Neoplasms

Pigmented Premalignant Malignant

During what period of life do conj nevi typically appear?
The first or second decade

In what three locations are they most commonly found?
--Juxtalimbal
--Plica
--Caruncle

Are they usually unilateral, or bilateral?
Unilateral

Can they be nonpigmented?
Conjunctival Neoplasms

**Benign**
1) Freckle (ephelis)
2) Complexion-associated melanosis
3) Nevus
   --Is a hamartoma
   --Progress from *junctional* nevus → *compound* nevus → *subepithelial* nevus
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   --Goblet cells in cyst secrete mucin → lesion enlarges → false impression of malignant transformation
   --Rapid enlargement during teens common, not worrisome for malignant change

**During what period of life do conj nevi typically appear?**
The first or second decade

**In what three locations are they most commonly found?**
--Juxtalimbal
--Plica
--Caruncle

**Are they usually unilateral, or bilateral?**
Unilateral

**Can they be nonpigmented?**
Yes—about 1/3 are nearly devoid of pigment
Conjunctival Neoplasms

Conjunctival nevus: Nonpigmented
Conjunctival Neoplasms

**Benign**
1) Freckle (ephelis)
2) Complexion-associated melanosis
3) Nevus
   --Is a hamartoma
   --Progress from *junctional* nevus → *compound* nevus → *subepithelial* nevus
   --1/2 contain epithelial inclusion cysts
   --Goblet cells in cyst secrete mucin → lesion enlarges → false impression of malignant transformation
   --Rapid enlargement during teens common, not worrisome for malignant change

**Pigmented**

**Premalignant**

**Malignant**

*During what period of life do conj nevi typically appear?*
The first or second decade

*In what three locations are they most commonly found?*
--Juxtalimbal
--Plica
--Caruncle

*Are they usually unilateral, or bilateral?*
Unilateral

*Can they be nonpigmented?*
Yes—about 1/3 are nearly devoid of pigment

*Do conj nevi carry a risk of malignant transformation?*
Conjunctival Neoplasms

**Benign**
1) Freckle (ephelis)
2) Complexion-associated melanosis
3) Nevus
   --Is a hamartoma
   --Progress from junctional nevus \( \rightarrow \)
      compound nevus \( \rightarrow \) subepithelial nevus
   --1/2 contain epithelial inclusion cysts
   --Goblet cells in cyst secrete mucin \( \rightarrow \)
      lesion enlarges \( \rightarrow \) false impression of malignant transformation
   --Rapid enlargement during teens common, not worrisome for malignant change

**During what period of life do conj nevi typically appear?**
The first or second decade

**In what three locations are they most commonly found?**
--Juxtalimbal
--Plica
--Caruncle

**Are they usually unilateral, or bilateral?**
Unilateral

**Can they be nonpigmented?**
Yes—about 1/3 are nearly devoid of pigment

**Do conj nevi carry a risk of malignant transformation?**
Yes, albeit a small one (<1%)
Conjunctival Neoplasms

**Benign**
1) Freckle (ephelis)
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3) Nevus
   - Is a hamartoma
   - Progress from *junctional* nevus → *compound* nevus → *subepithelial* nevus
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   - Lesion enlarges → false impression of malignant transformation
   - Rapid enlargement during teens common, not worrisome for malignant change

**During what period of life do conj nevi typically appear?**
The first or second decade

**In what three locations are they most commonly found?**
- Juxtalimbal
- Plica
- Caruncle

**Do conj nevi carry a risk of malignant transformation?**
Yes, albeit a small one (<1%)
**Conjunctival Neoplasms**

- **Benign**
  1. Freckle (ephelis)
  2. Complexion-associated melanosis
  3. Nevus
     - Is a hamartoma
     - Progress from junctional nevus → compound nevus → subepithelial nevus
     - 1/2 contain epithelial inclusion cysts
     - Goblet cells in cyst secrete mucin → lesion enlarges → false impression of malignant transformation
     - Rapid enlargement during teens common, not worrisome for malignant change

**During what period of life do conj nevi typically appear?**
The first or second decade

**In what three locations are they most commonly found?**
- Juxtalimbal
- Plica
- Caruncle

There’s a simple, commonsense reason why these pigmented lesions have a nonzero malignancy risk. What is it?
It’s that the evolution of a nevus does involve some replication of melanocytes, which introduces the opportunity for malignant transformation

**Do conj nevi carry a risk of malignant transformation?**
Yes, albeit a small one (<1%)
Conjunctival Neoplasms

**Benign**
1) Freckle (ephelis)
2) Complexion-associated melanosis
3) Nevus
   --Is a hamartoma
   --Progress from *junctional* nevus → *compound* nevus → *subepithelial* nevus
   --1/2 contain epithelial inclusion cysts
   --Goblet cells in cyst secrete mucin
   --Rapid enlargement during teens common, not worrisome for malignant change

During what period of life do conj nevi typically appear?
The first or second decade

In what three locations are they most commonly found?
--Juxtalimbal
--Plica
--Caruncle

There's a simple, commonsense reason why these pigmented lesions have a nonzero malignancy risk. What is it?
It's that the evolution of a nevus does involve some replication of melanocytes, which introduces the opportunity for malignant transformation

Do conj nevi carry a risk of malignant transformation?
Yes, albeit a small one (<1%)

For this reason, conj nevi need to followed on a regular basis with serial photography
Conjunctival Neoplasms

**Pre-malignant**
PAM (primary acquired melanosis)

There's a simple, commonsense reason why PAM can carry a significant malignancy risk. What is it?
Conjunctival Neoplasms

There’s a simple, commonsense reason why PAM can carry a significant malignancy risk. What is it? It’s that PAM can involve extensive melanocyte replication, which if present, provides opportunity for malignant transformation.

**Premalignant**

*PAM (primary acquired melanosis)*

**Malignant**
Conjunctival Neoplasms

**Pre-malignant**
PAM (primary acquired melanosis)

---

There’s a simple, commonsense reason why PAM can carry a significant malignancy risk. What is it?

It’s that PAM can involve extensive melanocyte replication, which if present, provides opportunity for malignant transformation.

*PAM comes in two basic forms—what are they?*

--?

--?

---

![Diagram](image-url)
Conjunctival Neoplasms

There’s a simple, commonsense reason why PAM can carry a significant malignancy risk. What is it? It’s that PAM can involve extensive melanocyte replication, which if present, provides opportunity for malignant transformation.

PAM comes in two basic forms—what are they?
--PAM without atypia: The proliferating melanocytes are confined to the basal epithelial layer, and lack atypical features.
--PAM with atypia: The proliferating melanocytes migrate into more superficial epithelial layers, and display atypical features.
**Conjunctival Neoplasms**

**Pre-malignant**

PAM (primary acquired melanosis)

---

**Conjunctival**

*There’s a simple, commonsense reason why PAM can carry a significant malignancy risk. What is it?*

It’s that PAM can involve extensive melanocyte replication, which if present, provides opportunity for malignant transformation.

*PAM comes in two basic forms—what are they?*

--PAM without atypia

--PAM with atypia

---

**Premalignant**

**Malignant**
Conjunctival Neoplasms

**Conjunctival Neoplasms**

Pre-malignant
PAM (primary acquired melanosis)

There's a simple, commonsense reason why PAM can carry a significant malignancy risk. What is it?
It's that PAM can involve extensive melanocyte replication, which if present, provides opportunity for malignant transformation.

PAM comes in two basic forms—what are they? How does each behave?
--PAM without atypia: ?

--PAM with atypia

Premalignant

Malignant
Conjunctival Neoplasms

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--PAM with atypia

PAM (primary acquired melanosis)

Pre-malignant

Premalignant

Malignant
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Conjunctival Neoplasms

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Conjunctival Neoplasms

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How can you tell at the slit-lamp whether a PAM lesion has atypia?

Premalignant

Malignant
Conjunctival Neoplasms

Pre-malignant

PAM (primary acquired melanosis)

Conjunctival Pigmented Premalignant Malignant

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Premalignant

Malignant

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Conjunctival Neoplasms

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Conjunctival Neoplasms

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OK, what are ‘atypical features’ histologically?
The usual suspects, including:

- Mitotic figures
- Nuclei that are large, pleomorphic and/or hyperchromatic

Pre-malignant

PAM (primary acquired melanosis)

Conjunctival
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Conjunctival Neoplasms

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...
Conjunctival Neoplasms

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How can you tell at the slit-lamp whether a PAM lesion has atypia?
You can’t—this call can only be made histologically.
Conjunctival Neoplasms

PAM with atypia. Atypical, melanin-laden cells are present approximately midway through the epithelium.
Conjunctival Neoplasms

Pigmented

Premalignant

Malignant

Pre-malignant

PAM (primary acquired melanosis)

Conjunctival

There’s a simple, commonsense reason why PAM can carry a significant malignancy risk. What is it?

In terms of both histology and clinical import, PAM without atypia is essentially identical to CAM

PAM comes in two basic forms—what are they? How does each behave?

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You can’t—this call can only be made by your friend the pathologist

OK, what are ‘atypical features’ histologically?

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 Conjunctival Neoplasms

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- **PAM with atypia**: The proliferating melanocytes migrate into more superficial epithelial layers, displaying atypical features.

Because this next section deals with pre-malignant lesions, it will concern PAM with atypia exclusively.

How can you tell at the slit-lamp whether a PAM lesion has atypia?
You can't—this call can only be made by your friend the pathologist.

OK, what are 'atypical features' histologically?
The usual suspects, including:
- Mitotic figures
- Nuclei that are large, pleomorphic and/or hyperchromatic
Conjunctival Neoplasms

Pre-malignant
PAM (primary acquired melanosis)
--Skin analog:

Benign

Premalignant

Malignant

Pigmented

Conjunctival Neoplasms

Risk factors: White; middle-aged; fair complexion

Malignant transformation indicated by ↑ size, nodularity, ↑ vascularity

Management:

Bulbar: Observe. If suspect malignant change, excise

Palpebral: Don't observe—excise!
Conjunctival Neoplasms

**Pre-malignant**

PAM (primary acquired melanosis)

--Skin analog: Lentigo maligna

---

**Conjunctival Neoplasms**

- **Pigmented**
  - **Benign**
  - **Premalignant**
    - **Malignant**
Conjunctival Neoplasms

Pre-malignant
PAM (primary acquired melanosis)
--Skin analog: Lentigo maligna
--Cystic? (Y/N)

Conjunctival Neoplasms

Pigmented

Benign

Premalignant

Malignant
Conjunctival Neoplasms

**Pre-malignant**

PAM (primary acquired melanosis)

- Skin analog: Lentigo maligna
- Cystic? NO

---

**Pigmented**

- Benign

**Premalignant**

- Malignant

---

**Conjunctival Neoplasms**

- Bulbar: Observe. If suspect malignant change, excise.
- Palpebral: Don’t observe—excise!
Conjunctival Neoplasms

PAM with (biopsy-proven) atypia. Note the absence of cysts.
Conjunctival Neoplasms

PAM with atypia: Re-presentation of image to point out the absence of cystic changes
Conjunctival Neoplasms

**Pre-malignant**

PAM (primary acquired melanosis)
- Skin analog: Lentigo maligna
- Cystic? NO

---

**Benign**

(This is a key feature differentiating between PAM and conj nevi, which are typically cystic)
Conjunctival Neoplasms

Pre-malignant
PAM (primary acquired melanosis)
--Skin analog: Lentigo maligna
--Cystic? YES

While not cystic in appearance, PAM can manifest in a way that has a memorably spicy description. What is it? PAM may appear 'peppery'
Conjunctival Neoplasms

**Premalignant**
- PAM (primary acquired melanosis)
- Pigmentog: Lentigo maligna
- Cystic? YES

While not cystic in appearance, PAM can manifest in a way that has a memorably spicy description. What is it? PAM may appear ‘peppery’

**Pigmented**

**Benign**

**Premalignant**

**Malignant**

**Conjunctival Neoplasms**

**Peppery**
Conjunctival Neoplasms

Primary acquired melanosis (PAM). Slit-lamp photograph of a 72-year-old white man that shows “peppery” pigmentation of the perilimbal conjunctiva [rectangle].
Conjunctival Neoplasms

Conjunctival Neoplasms

Pre-malignant
PAM (primary acquired melanosis)
--Skin analog: Lentigo maligna
--Cystic? NO
--Bilateral? (Y/N)

Pigmented

Benign

Premalignant

Malignant

Bulbar: Observe. If suspect malignant change, excise.

Palpebral: Don’t observe—excise!
Conjunctival Neoplasms

**Pre-malignant**
- PAM (primary acquired melanosis)
- Skin analog: Lentigo maligna
- Cystic? NO
- Bilateral? NO

**Conjunctival Neoplasms**

**Pigmented**

**Benign**

**Premalignant**

**Malignant**
Conjunctival Neoplasms

**Pre-malignant**
PAM (primary acquired melanosis)
--Skin analog: Lentigo maligna
--Cystic? NO
--Bilateral? NO
--Risk factors: race; age; complexion

Benign

Premalignant

Malignant
Conjunctival Neoplasms

**Pre-malignant**
- PAM (primary acquired melanosis)
  - Skin analog: Lentigo maligna
  - Cystic? NO
  - Bilateral? NO
  - Risk factors: White; middle-aged; fair complexion

**Conjunctival Neoplasms**

**Pigmented**

**Benign**

**Premalignant**

**Malignant**
Conjunctival Neoplasms

**Pre-malignant**
- PAM (primary acquired melanosis)
  - Skin analog: Lentigo maligna
  - Cystic? NO
  - Bilateral? NO
  - Risk factors: White; middle-aged; fair complexion
  - Malignant transformation indicated by
    - Bulbar: Observe. If suspect malignant change, excise
    - Palpebral: Don’t observe—excise!

- Benign
- Premalignant
- Malignant

3 things
Conjunctival Neoplasms

Pre-malignant
PAM (primary acquired melanosis)
--Skin analog: Lentigo maligna
--Cystic? NO
--Bilateral? NO
--Risk factors: White; middle-aged; fair complexion
--Malignant transformation indicated by ↑ size, nodularity, ↑ vascularity
Conjunctival Neoplasms

**Pre-malignant**
PAM (primary acquired melanosis)
--Skin analog: Lentigo maligna
--Cystic? NO
--Bilateral? NO
--Risk factors: White; middle-aged; fair complexion
--Malignant transformation indicated by ↑ size, nodularity, ↑ vascularity

---

1. **Conjunctival Neoplasms**
2. **Pigmented**
3. **Premalignant**
4. **Benign**
5. **Malignant**
Conjunctival Neoplasms

Pre-malignant
PAM (primary acquired melanosis)
--Skin analog: Lentigo maligna
--Cystic? NO
--Bilateral? NO
--Risk factors: White; middle-aged; fair complexion
--Malignant transformation indicated by ↑ size, nodularity

Benign
Premalignant
Malignant

(ie, the presence of 'feeder vessels')
Conjunctival Neoplasms

Pre-malignant
PAM (primary acquired melanosis)
--Skin analog: Lentigo maligna
--Cystic? NO
--Bilateral? NO
--Risk factors: White; middle-aged; fair complexion
--Malignant transformation indicated by ↑ size, nodularity

↑ vascularity

(ie, the presence of 'feeder vessels')
Conjunctival Neoplasms

Note the nodularity, and feeder vessels (full disclosure: this is a melanoma, not PAM)
Conjunctival Neoplasms

**Pre-malignant**
PAM (primary acquired melanosis)
--Skin analog: Lentigo maligna
--Cystic? NO
--Bilateral? NO
--Risk factors: White; middle-aged; fair complexion
--Malignant transformation indicated by ↑ size, nodularity, ↑ vascularity
--Management:
  --**Bulbar**: If suspect malignant change, excise

**Pigmented**

Conjunctival Neoplasms

**Premalignant**

Benign

Malignant
Conjunctival Neoplasms

**Pre-malignant**

*PAM* (primary acquired melanosis)
--Skin analog: Lentigo maligna
--Cystic? NO
--Bilateral? NO
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Conjunctival Neoplasms

**Pre-malignant**
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-- Bilateral? NO
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Conjunctival Neoplasms

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Conjunctival Neoplasms

- Pigmented
  - Premalignant
  - Benign
- Malignant
  - Melanoma

- Are all conj melanomas pigmented?

- Melanoma
  - Prevalence 1 per 2 million whites
  - Metastasize? Yes
  - 1/3 arise from PAM, 1/3 from acquired (not congenital) nevi, 1/3 de novo
  - Prognosis: Better than cutaneous
  - By location: Bulbar > nonbulbar, Limbal > nonlimbal, de novo < not de novo
  - Management:
    - Excisional biopsy (no ↑ risk of mets)
    - Exenterate if orbital
    - Check for lymphadenopathy
Conjunctival Neoplasms

**Pigmented**
- Benign
- Premalignant
- Malignant

**Malignant Melanoma**

Are all conj melanomas pigmented? No—big % are amelanotic!

**Conjunctival Neoplasms**

Malignant—Prevalence 1 per 2 million whites—Metastasize? Yes—1/3 arise from PAM, 1/3 from acquired (not congenital) nevi, 1/3 de novo—Prognosis:

- Better than cutaneous
- By location: Bulbar > nonbulbar
  Limbal > nonlimbal
de novo < not de novo

**Management:**
- Excisional biopsy (no ↑ risk of mets)
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- Check for lymphadenopathy
Conjunctival Neoplasms

- Pigmented
  - Benign
  - Premalignant
  - Malignant - Melanoma
    - Prevalence: 1 per 2 million whites
    - Metastasize: Yes
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- Are all conj melanomas pigmented? No—25% are amelanotic!
Conjunctival Neoplasms

Seeing’s how 25% are amelanotic, you’d think the Magic Google Box would have been able to come up with a pic of one

Amelanotic conj melanoma
Conjunctival Neoplasms

- Pigmented
  - Benign
  - Premalignant
  - Malignant Melanoma

Are all conj melanomas pigmented? No—25% are amelanotic!

A certain subpopulation of conj melanomas are especially likely to be amelanotic—which population is that?
Conjunctival Neoplasms

Conjunctival Neoplasms

Pigmented

Benign

Premalignant

Malignant

Melanoma

A certain subpopulation of conj melanomas are especially likely to be amelanotic—which population is that? Recurrent lesions

Are all conj melanomas pigmented? No—25% are amelanotic!
Conjunctival Neoplasms

- Pigmented
  - Benign
  - Premalignant
  - Malignant Melanoma
    - Are all conj melanomas pigmented? No—25% are amelanotic!
    - A certain subpopulation of conj melanomas are especially likely to be amelanotic—which population is that? Recurrent lesions
    - Does it matter whether the original melanoma was pigmented?

- Malignant
Conjunctival Neoplasms

Pigmented

Benign

Premalignant

Malignant

Melanoma

Are all conj melanomas pigmented? No—25% are amelanotic!

A certain subpopulation of conj melanomas are especially likely to be amelanotic—which population is that? Recurrent lesions

Does it matter whether the original melanoma was pigmented? Nope—whether or not it was pigmented, there’s a significant chance a recurrence will be amelanotic.

Conjunctival Neoplasms

1/3 arise from PAM, 1/3 from acquired (not congenital) nevi, 1/3 de novo

Prognosis:

Better than cutaneous

By location: Bulbar > nonbulbar

Limbal > nonlimbal

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Management:

Excisional biopsy (no ↑ risk of mets)

Exenterate if orbital

Check for lymphadenopathy
Conjunctival Neoplasms

**Pigmented**
- Benign
- Premalignant
- **Malignant**
  - **Melanoma**
    - Prevalence 1 per 2 million whites
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Conjunctival Neoplasms

Pigmented

Benign

Premalignant

Malignant

Malignant Melanoma
--Prevalence 1 per 2 million whites
Conjunctival Neoplasms

**Conjunctival Neoplasms**

**Pigmented**

- **Benign**
- **Premalignant**
- **Malignant**

**Malignant Melanoma**
--Prevalence 1 per 2 million whites

Which is more common, choroidal melanoma or skin melanoma?

Skin, by well over an order of magnitude

Which is more common, conj melanoma or choroidal melanoma?

Choroidal, by well over an order of magnitude (somewhere between 20 and 40 times as common). So, it follows that melanoma of the skin is hundreds of times more common than conj melanoma.

Conj melanoma must be quite rare. Roughly speaking, how many new cases/year are there in the US?

About 200
Conjunctival Neoplasms

Which is more common, choroidal melanoma or skin melanoma?
Skin, by well over an order of magnitude.

- Conjunctival Neoplasms
  - Pigmented
    - Benign
    - Premalignant
    - Malignant
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Conjunctival Neoplasms

**Conjunctival Neoplasms**

- **Pigmented**
  - Benign
  - Premalignant
  - **Malignant**

**Malignant Melanoma**
--Prevalence 1 per 2 million whites

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Conjunctival Neoplasms

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Conjunctival Neoplasms

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Conjunctival Neoplasms

- Pigmented
  - Benign
  - Premalignant
  - Malignant

- Malignant
  - Melanoma
    -- Prevalence 1 per 2 million whites

Can black people get it?

Yes, but at rates that are an order of magnitude less than whites.
Conjunctival Neoplasms

Conjunctival Neoplasms

Pigmented

Benign

Premalignant

Malignant

Malignant Melanoma
--Prevalence 1 per 2 million whites

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Exenterate if orbital
Check for lymphadenopathy
Conjunctival Neoplasms

**Pigmented**
- **Benign**
- **Premalignant**
- **Malignant**

**Malignant Melanoma**
- Prevalence 1 per 2 million whites

**Is there a gender predilection?**

No

Yes. Conj melanoma is a disease of the middle-aged and elderly. It is vanishingly rare in children and/or teens.
Conjunctival Neoplasms

**Pigmented**
- **Benign**
- **Premalignant**
- **Malignant**

**Malignant Melanoma**
- Prevalence 1 per 2 million whites

*Is there a gender predilection?*
- No
Conjunctival Neoplasms

Conjunctival Neoplasms

Pigmented

Benign

Premalignant

Malignant

Malignant Melanoma

--Prevalence 1 per 2 million whites

Is there a gender predilection?
No

Is there an age predilection?

 Conjunctival Neoplasms

--Prevalence 1 per 2 million whites

Is there a gender predilection?
No

Is there an age predilection?

 Conjunctival Neoplasms

--Prevalence 1 per 2 million whites

Is there a gender predilection?
No

Is there an age predilection?

 Conjunctival Neoplasms

--Prevalence 1 per 2 million whites

Is there a gender predilection?
No

Is there an age predilection?

 Conjunctival Neoplasms

--Prevalence 1 per 2 million whites

Is there a gender predilection?
No

Is there an age predilection?

 Conjunctival Neoplasms

--Prevalence 1 per 2 million whites

Is there a gender predilection?
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Is there an age predilection?

 Conjunctival Neoplasms

--Prevalence 1 per 2 million whites

Is there a gender predilection?
No

Is there an age predilection?

 Conjunctival Neoplasms

--Prevalence 1 per 2 million whites

Is there a gender predilection?
No

Is there an age predilection?

 Conjunctival Neoplasms

--Prevalence 1 per 2 million whites

Is there a gender predilection?
No

Is there an age predilection?

 Conjunctival Neoplasms

--Prevalence 1 per 2 million whites

Is there a gender predilection?
No

Is there an age predilection?

 Conjunctival Neoplasms

--Prevalence 1 per 2 million whites

Is there a gender predilection?
No

Is there an age predilection?
Conjunctival Neoplasms

Conjunctival Neoplasms

Pigmented

Benign

Premalignant

Malignant

Malignant Melanoma

--Prevalence 1 per 2 million whites

Is there a gender predilection? No

Is there an age predilection? Yes. Conj melanoma is a disease of the middle-aged and elderly—it is vanishingly rare in children and/or teens
Conjunctival Neoplasms

- Pigmented
  - Benign
  - Premalignant
    - Malignant

**Malignant**
- Melanoma
  - Prevalence: 1 per 2 million whites
  - Metastasize? (Y/N)
Conjunctival Neoplasms

**Conjunctival Neoplasms**

**Pigmented**

- **Benign**
- **Premalignant**
- **Malignant**

**Malignant**

- Melanoma
  - Prevalence: 1 per 2 million whites
  - Metastasize?: YES

**Prognosis**:
- Better than cutaneous
- By location: Bulbar > nonbulbar
  - Limbal > nonlimbal
  - de novo < not de novo

**Management**:
- Excisional biopsy (no ↑ risk of mets)
- Exenterate if orbital
- Check for lymphadenopathy
Conjunctival Neoplasms

Conjunctival Neoplasms

Pigmented

Benign

Premalignant

Malignant

Malignant Melanoma

- Prevalence 1 per 2 million whites
- Metastasize? YES

Does conj melanoma metastasize hematogenously, like choroidal melanoma?
Conjunctival Neoplasms

Conjunctival Neoplasms

Pigmented

Benign

Premalignant

Malignant

Malignant Melanoma

Prevalence: 1 per 2 million whites

--Metastasize? YES

Does conj melanoma metastasize hematogenously, like choroidal melanoma?
No, it spreads via lymphatics to regional lymph nodes, and from there to the rest of the body.
Conjunctival Neoplasms

- **Pigmented**
  - **Malignant**
    - **Melanoma**
      - Prevalence: 1 per 2 million whites
      - Metastasize? **YES**

**Does conj melanoma metastasize hematogenously, like choroidal melanoma?**
No, it spreads via lymphatics to regional lymph nodes, and from there to the rest of the body.

**Does conj melanoma show a predilection for the liver, like choroidal melanoma?**
Conjunctival Neoplasms

Conjunctival Neoplasms

Pigmented

Benign

Premalignant

Malignant

Malignant Melanoma
- Prevalence 1 per 2 million whites
-- Metastasize? YES

Does conj melanoma metastasize hematogenously, like choroidal melanoma?
No, it spreads via lymphatics to regional lymph nodes, and from there to the rest of the body.

Does conj melanoma show a predilection for the liver, like choroidal melanoma?
No—it is far less selective, showing up everywhere.
Conjunctival Neoplasms

- Pigmented
  - Benign
  - Premalignant
    - Malignant
      - Malignant Melanoma
        - Prevalence 1 per 2 million whites
        - Metastasize? YES
        - 70% arise from , 5% from , 25%
Conjunctival Neoplasms

- **Pigmented**
  - **Benign**
  - **Premalignant**
  - **Malignant**

**Malignant Melanoma**
- Prevalence 1 per 2 million whites
- Metastasize? YES
- 70% arise from PAM, 5% from nevi, 25% de novo

- Management:
  - Excisional biopsy (no ↑ risk of mets)
  - Exenterate if orbital
  - Check for lymphadenopathy
Conjunctival Neoplasms

Conjunctival Neoplasms

Pigmented

Benign

Premalignant

Malignant

There is some inconsistency across BCSC books on this score, but these numbers should work:

- Prevalence: 1 per 2 million whites
- Metastasize? Yes
- 70% arise from PAM, 5% from nevi, 25% de novo

-- Better than cutaneous
-- By location: Bulbar > nonbulbar
Limbal > nonlimbal
-- de novo < not de novo

Management:

- Excisional biopsy (no ↑ risk of mets)
- Exenterate if orbital
- Check for lymphadenopathy
Conjunctival Neoplasms

**Conjunctival Neoplasms**

- **Pigmented**
  - Benign
  - Premalignant
  - Malignant

**Malignant**

- Melanoma
  - Prevalence: 1 per 2 million whites
  - Metastasize? YES
  - 70% arise from PAM, 5% from nevi, 25% de novo
  - Prognosis:
    - Better vs worse than cutaneous

- Management:
  - Excisional biopsy (no ↑ risk of mets)
  - Exenterate if orbital
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Conjunctival Neoplasms

- Pigmented
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    - Malignant Melanoma
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        - Better than cutaneous
Conjunctival Neoplasms

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  - **Benign**
  - **Premalignant**
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**Malignant**
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  - --Prognosis:
    - --Better than cutaneous
    - --By location: Bulbar > nonbulbar Limbal > nonlimbal
Conjunctival Neoplasms

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---

**What is the overall mortality rate for conj melanoma?**

There’s some disagreement among the BCSC books, but 25% is a reasonable compromise.

**What is the recurrence rate?**

A staggering 50%

What implication does this appalling rate carry regarding managing these pts?

That they require close follow-up for the rest of their lives.
Conjunctival Neoplasms

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Conjunctival Neoplasms

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Conjunctival Neoplasms

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  - Management:
    - type of biopsy (no ↑ risk of mets)
**Conjunctival Neoplasms**

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Conjunctival Neoplasms

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**Pigmented**

*Conjunctival Neoplasms*

---

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Quite wide—2 mm at least

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Conjunctival Neoplasms

Conjunctival Neoplasms

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Conjunctival Neoplasms

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**How wide should the margins be around the lesion?**
Quite wide—2 mm at least

**How should the lesion be handled intraoperatively?**
It shouldn’t; ie, a ‘no touch’ technique should be employed—that is, at no point during the case should the surgeon make contact with the lesion itself

---

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What is the concern motivating the ‘no touch’ technique?

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In light of this concern, what alternative to excisional biopsy is obviously unacceptable in managing a lesion thought to be a conj melanoma?

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(No ↑ risk of mets)
Conjunctival Neoplasms

**Conjunctival Neoplasms**

**Pigmented**

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**Incisional** biopsy

---

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Conjunctival Neoplasms

**Conjunctival Neoplasms**

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  - Surgery if orbital
Conjunctival Neoplasms

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  - Exenterate if orbital

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Conjunctival Neoplasms

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  - Check for

 uh-oh
Conjunctival Neoplasms

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  - Check for lymphadenopathy
Conjunctival Neoplasms

You see the depicted lesion in clinic. Note that it seems to have all the hallmarks of a conj melanoma: It is juxtalimbal and pigmented. It is elevated. It has feeder vessels. It has no cysts. Despite all this, it definitively is not a conj melanoma. What is it?

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A melanoma of the ciliary body extending through the sclera. Don’t be fooled by this lesion!

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Conjunctival Neoplasms

Melanoma of the ciliary body with extrascleral extension, presenting as an ocular surface mass. Note that there is no PAM surrounding the nodule, a clue that the lesion might have an intraocular origin. Also note that the lesion is associated with deep episcleral/scleral vessels (sentinel vessels, *arrow*) and does not obscure the overlying conjunctival vessels. This indicates that the lesion is deep to the conjunctiva.
Conjunctival Neoplasms

Conjunctival Neoplasms

Pigmented

Benign

Premalignant

Malignant

You see a patient with an apparent nevus of the palpebral conjunctiva. How should it be managed?
You see a patient with an apparent nevus of the palpebral conjunctiva. How should it be managed? **Excise it.** ‘Nevi’ of the palpebral conjunctiva are exceedingly rare. In general, all pigmented palpebral-conj lesions should be excised at once and sent for pathologic examination.
You see a patient with an apparent nevus of the palpebral conjunctiva. How should it be managed?

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*What about a fornical ‘nevus’?*
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What about a fornical ‘nevus’? Same rule applies
Conjunctival Neoplasms

You see an elderly white patient with a pigmented lesion of the inferior palpebral/forniceal conjunctiva. Recalling Dr. Flynn’s admonition that all such lesions should be treated as malignant, you sign the patient up for excision and present her to your staff. After glancing at the lesion, he asks her one question, which she answers in the affirmative. He then tells you to cancel the procedure, and proceeds to mock you mercilessly in public on a daily basis. What did he ask the patient?

He asked if she had ever used an epinephrine drop for glaucoma.

Chronic epinephrine use gives rise to adrenochrome deposits, darkly pigmented lesions of the inferior forniceal/palpebral conjunctiva. They are of no clinical significance and do not need excision.
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Conjunctival Neoplasms

Adrenochrome deposits
You see a young patient with a pigmented lesion of the inferior palpebral/forniceal conjunctiva. Your staff’s stinging rebuke of your plan to excise adrenochrome deposits still ringing in your ears, you ask the patient about a glaucoma/epinephrine use history, which she denies. Recalling Dr. Flynn’s admonition that all such lesions should be treated as malignant, you sign the patient up for excision and, tremulously, present her to your staff. After glancing at the lesion, he asks her one question, which she answers in the affirmative. He then tells you to cancel the procedure, and proceeds to mock you with such ferocity that you quit ophthalmology and work as an optometrist. What did he ask the patient?
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He asked if she wore dark mascara frequently. It’s not uncommon for mascara to end up in the fornix.
Conjunctival Neoplasms

- Lymphatic
- Pigmented
- Epithelial
Conjunctival Neoplasms

Conjunctival Neoplasms

Lymphatic

Pigmented

Epithelial

Papilloma

OSSN

Mucoepidermoid Ca

OSSN = Ocular surface squamous neoplasia
Conjunctival Neoplasms

What is the etiology of conj papillomas?

- Lymphatic
- Pigmented
- Epithelial
  - Papilloma
  - OSSN
  - Mucoepidermoid Ca
What is the etiology of conj papillomas?
Infection with a human papillomavirus (HPV)
Conjunctival Neoplasms

What is the etiology of conj papillomas?
Infection with a human papillomavirus (HPV)

Infection of the skin by the same virus results in what lesion?
Conjunctival Neoplasms

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OSSN
Mucoepidermoid Ca
What is the etiology of conj papillomas?
Infection with a **human papillomavirus (HPV)**

*Infection of the skin by the same virus results in what lesion?*
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*This same virus is causative in what all-too-common gynecologic malignancy?*

**Mucoepidermoid Ca**
Conjunctival Neoplasms

What is the etiology of conj papillomas? Infection with a human papillomavirus (HPV)

Infection of the skin by the same virus results in what lesion? Verrucae (ie, warts)

This same virus is causative in what all-too-common gynecologic malignancy? Cervical cancer

OSSN

Mucoepidermoid Ca
Conjunctival Neoplasms

What is the etiology of conj papillomas?
Infection with a human papillomavirus (HPV)

 Conj papillomas come in two basic morphologies—what are they?
Conjunctival Neoplasms

What is the etiology of conj papillomas?
Infection with a human papillomavirus (HPV)

Conj papillomas come in two basic morphologies—what are they?
Pedunculated, and sessile
Conjunctival Neoplasms

Sessile papilloma. Note the glistening surface with red dots or "corkscrew" blood vessels, creating the classic strawberry-like appearance

Pedunculated papilloma. Note the inferior fornix location and a multilobulated appearance

Papillomas
## Conjunctival Neoplasms

<table>
<thead>
<tr>
<th>Papilloma</th>
<th>HPV subtype</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pedunculated</td>
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<tr>
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- **Conjunctival Neoplasms**
- **Epithelial**
- **Papilloma**
  - Pedunculated
  - Sessile

**OSSN**

- **Papilloma HPV**
- **Subtype**
- **Location**
- **Appearance**
- **Malignant potential?**

<table>
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<tr>
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**Age at presentation**

- **Pedunculated**: 6, 11
- **Sessile**: 16, 18
Conjunctival Neoplasms

**Conjunctival Neoplasms**

Epithelial

- **Papilloma**
  - **Pedunculated**: Location - Inferior fornix, Appearance - On a stalk, Malignant potential?, Age at presentation - Childhood
  - **Sessile**: Location - Limbus, Appearance - Flat, strawberry-like, Malignant potential?, Age at presentation - Adulthood

**Table:**

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Which (if any) of these subtypes is/are associated with **cervical** cancer?
**Conjunctival Neoplasms**

**Epithelial**

**Papilloma**
- Pedunculated
- Sessile

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*Which (if any) of these subtypes is/are associated with cervical cancer? 16 and 18*
# Conjunctival Neoplasms

## Epithelial

### Papilloma

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*Note: HPV subtype 6, 11 is associated with Pedunculated papilloma located in the inferior fornix, whereas HPV subtype 16, 18 is associated with Sessile papilloma located at the limbus.*
## Conjunctival Neoplasms

### Epithelial

#### Papilloma

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- **Pedunculated**: 6, 11, Inferior fornix
- **Sessile**: 16, 18, Limbus

- **Age at presentation**:
  - Pedunculated: Childhood
  - Sessile: Adulthood

- **Malignant potential?**: None

- **Papilloma HPV subtype Location Appearance Malignant potential?**
  - Pedunculated: 6, 11, Inferior fornix, None, Childhood
  - Sessile: 16, 18, Limbus, None, Adulthood
Conjunctival Neoplasms

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## Conjunctival Neoplasms

**Conjunctival Neoplasms**

### Epithelial

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### Conjunctival Neoplasms

**Conjunctival Neoplasms**

**Epithelial Neoplasms**

- **Papilloma**
  - **Pedunculated**
  - **Sessile**

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*Note: OSSN stands for Ocular Surface Squamous Neoplasms.*
Conjunctival Neoplasms

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Which (if any) of these subtypes is/are associated with cervical cancer? 16 and 18
Conjunctival Neoplasms

### Papilloma

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**Conjunctival Neoplasms**

**Epithelial**

**Papilloma**

- Pedunculated
- Sessile
Conjunctival Neoplasms

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Epithelial Papilloma

- Pedunculated
- Sessile

OSSN Papilloma HPV subtype Location Appearance Malignant potential? Age at presentation

- Pedunculated 6, 11 Inferior fornix On a stalk None Childhood
- Sessile 16, 18 Limbus Flat, ‘strawberry’ Yes Adulthood
Conjunctival Neoplasms

How are conj papillomas treated?
Conjunctival Neoplasms

How are conj papillomas treated?
Medical treatment can be considered, either:

---
Conjunctival Neoplasms

How are conj papillomas treated?
Medical treatment can be considered, either:
--PO drug
--
Conjunctival Neoplasms

How are conj papillomas treated?
Medical treatment can be considered, either:
--PO cimetidine
--
How are conj papillomas treated?
Medical treatment can be considered, either:
-- PO cimetidine for a length of time
--
Conjunctival Neoplasms

How are conj papillomas treated?
Medical treatment can be considered, either:
--PO cimetidine for 3 months (or more!)
--
 Conjunctival Neoplasms

How are conj papillomas treated?
Medical treatment can be considered, either:
--PO cimetidine for 3 months (or more!)
--Topical drug

Epithelial

Papilloma

Pedunculated  Sessile

OSSN

Mucoepidermoid Ca
How are conj papillomas treated?
Medical treatment can be considered, either:
-- PO cimetidine for 3 months (or more!)
-- Topical interferon
How are conj papillomas treated?
Medical treatment can be considered, either:
-- PO cimetidine for 3 months (or more!)
-- Topical interferon for length of time
Conjunctival Neoplasms

How are conj papillomas treated?
Medical treatment can be considered, either:
--PO cimetidine for 3 months (or more!)
--Topical interferon for the same!
Conjunctival Neoplasms

How are conj papillomas treated?
Medical treatment can be considered, either:
--PO cimetidine for 3 months (or more!)
--Topical interferon for the same!
Surgical treatment consists of excision with technique
Conjunctival Neoplasms

How are conj papillomas treated?
Medical treatment can be considered, either:
--PO cimetidine for 3 months (or more!)
--Topical interferon for the same!
Surgical treatment consists of ‘no touch’ excision with cryo
Conjunctival Neoplasms

How are conj papillomas treated?
Medical treatment can be considered, either:
--PO cimetidine for 3 months (or more!)
--Topical interferon for the same!
Surgical treatment consists of ‘no touch’ excision with cryo followed by adjunct

Conjunctival Neoplasms

Epithelial

Papilloma

Pedunculated Sessile

OSSN

Mucoepidermoid Ca
Conjunctival Neoplasms

How are conj papillomas treated?
Medical treatment can be considered, either:
--PO cimetidine for 3 months (or more!)
--Topical interferon for the same!
Surgical treatment consists of ‘no touch’ excision with cryo followed by cimetidine or interferon for 3 months
**Conjunctival Neoplasms**

How are conj papillomas treated?
Medical treatment can be considered, either:
--PO cimetidine for 3 months (or more!)
--Topical interferon for the same!
Surgical treatment consists of ‘no touch’ excision with cryo followed by cimetidine or interferon for 3 months.

Why the ‘no touch’ surgical approach?
Conjunctival Neoplasms

How are conj papillomas treated?
Medical treatment can be considered, either:
--PO cimetidine for 3 months (or more!)
--Topical interferon for the same!
Surgical treatment consists of 'no touch' excision with cryo followed by cimetidine or interferon for 3 months

Why the 'no touch' surgical approach?
For the same reason no-touch is used in excising conj melanomas—in hopes of avoiding seeding the cells across the uninvolved conj

Epithelial

Conjunctival Neoplasms

Papilloma

Pedunculated

Sessile

OSSN

Mucoepidermoid Ca
Conjunctival Neoplasms

**Generally speaking, to what does the term ocular surface squamous neoplasia refer?**
Generally speaking, to what does the term ocular surface squamous neoplasia refer? OSSN are a spectrum of squamous tumors of the ocular surface (both conj and cornea)
Conjunctival Neoplasms

Generally speaking, to what does the term ocular surface squamous neoplasia refer?
OSSN are a spectrum of squamous tumors of the ocular surface (both conjunctiva and cornea).

Hol up—the cornea can have a surface neoplasia?
Conjunctival Neoplasms

Generally speaking, to what does the term ocular surface squamous neoplasia refer?
OSSN are a spectrum of squamous tumors of the ocular surface (both conjunctiva and cornea).

Hol up—the cornea can have a surface neoplasia?
Absolutely.
Conjunctival Neoplasms

OSSN: Corneal involvement
Generally speaking, to what does the term ocular surface squamous neoplasia refer? OSSN are a spectrum of squamous tumors of the ocular surface (both conj and cornea)

Do they all have malignant potential?
Conjunctival Neoplasms

Generally speaking, to what does the term ocular surface squamous neoplasia refer? OSSN are a spectrum of squamous tumors of the ocular surface (both conj and cornea)

Do they all have malignant potential? Yes (although some are low-grade in this regard)
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Do they all have malignant potential? Yes (although some are low-grade in this regard).

There are a number of risk factors for the development of OSSN—what are they?

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Conjunctival Neoplasms

Generally speaking, to what does the term ocular surface squamous neoplasia refer? OSSN are a spectrum of squamous tumors of the ocular surface (both conj and cornea)

Do they all have malignant potential? Yes (although some are low-grade in this regard)

There are a number of risk factors for the development of OSSN—what are they?
--- UV light exposure
--- IR
Generally speaking, to what does the term ocular surface squamous neoplasia refer? OSSN are a spectrum of squamous tumors of the ocular surface (both conj and cornea)

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Do they all have malignant potential?
Yes (although some are low-grade in this regard)

There are a number of risk factors for the development of OSSN—what are they?
--UV light exposure
--Fair vs Dark complexion
--?
Conjunctival Neoplasms

Generally speaking, to what does the term ocular surface squamous neoplasia refer?
OSSN are a spectrum of squamous tumors of the ocular surface (both conj and cornea)

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There are a number of risk factors for the development of OSSN—what are they?
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Conjunctival Neoplasms

Conjunctival Neoplasms

Generally speaking, to what does the term ocular surface squamous neoplasia refer? OSSN are a spectrum of squamous tumors of the ocular surface (both conj and cornea)

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There are a number of risk factors for the development of OSSN—what are they?
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--Fair complexion
--Younger vs advancing age
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Generally speaking, to what does the term ocular surface squamous neoplasia refer? OSSN are a spectrum of squamous tumors of the ocular surface (both conj and cornea)

Do they all have malignant potential? Yes (although some are low-grade in this regard)

There are a number of risk factors for the development of OSSN—what are they? --UV light exposure --Fair complexion --Advancing age --?
**Conjunctival Neoplasms**

*Generally speaking, to what does the term ocular surface squamous neoplasia refer?*  
OSSN are a spectrum of squamous tumors of the ocular surface (both conj and cornea)

*Do they all have malignant potential?*  
Yes (although some are low-grade in this regard)

*There are a number of risk factors for the development of OSSN—what are they?*  
--UV light exposure  
--Fair complexion  
--Advancing age  
--Systemic condition  
--?
Conjunctival Neoplasms

Generally speaking, to what does the term ocular surface squamous neoplasia refer? OSSN are a spectrum of squamous tumors of the ocular surface (both conj and cornea).

Do they all have malignant potential? Yes (although some are low-grade in this regard).

There are a number of risk factors for the development of OSSN—what are they?
--UV light exposure
--Fair complexion
--Advancing age
--HIV+
--?
Conjunctival Neoplasms

Generally speaking, to what does the term ocular surface squamous neoplasia refer? OSSN are a spectrum of squamous tumors of the ocular surface (both conj and cornea)

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There are a number of risk factors for the development of OSSN—what are they?
--UV light exposure
--Fair complexion
--Advancing age
--HIV+
--bad habit
Generally speaking, to what does the term ocular surface squamous neoplasia refer? OSSN are a spectrum of squamous tumors of the ocular surface (both conj and cornea)

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There are a number of risk factors for the development of OSSN—what are they?
--UV light exposure
--Fair complexion
--Advancing age
--HIV+
--Smoking
Generally speaking, to what does the term ocular surface squamous neoplasia refer? OSSN are a spectrum of squamous tumors of the ocular surface (both conj and cornea).

Do they all have malignant potential? Yes (although some are low-grade in this regard).

There are a number of risk factors for the development of OSSN—what are they?

- UV light exposure
- Fair complexion
- Younger age
- HIV+
- Smoking

If an individual younger than 50 has OSSN, what should you do?
Generally speaking, to what does the term ocular surface squamous neoplasia refer?
OSSN are a spectrum of squamous tumors of the ocular surface (both conj and cornea)

Do they all have malignant potential?
Yes (although some are low-grade in this regard)

There are a number of risk factors for the development of OSSN—what are they?
- UV light exposure
- Fair complexion
- Advancing age
- HIV+?
- Smoking

If an individual younger than 50 has OSSN, what should you do?
Check them for HIV
Conjunctival Neoplasms

Generally speaking, to what does the term ocular surface squamous neoplasia refer?
OSSN are a spectrum of squamous tumors of the ocular surface (both conj and cornea)

Do they all have malignant potential?
Yes (although some are low-grade in this regard)

There are a number of risk factors for the development of OSSN—what are they?
--UV light exposure
--Dark complexion
--Advancing age
--HIV+
--Smoking

If an individual younger than 50 has OSSN, what should you do?
Check them for HIV

If a dark-skinned individual has OSSN, what should you do?
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- Advancing age
- HIV+?
- Smoking

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If a dark-skinned individual has OSSN, what should you do?
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Conjunctival Neoplasms

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Do they all have malignant potential?
Yes (although some are low-grade in this regard)

There are a number of risk factors for the development of OSSN—what are they?
--UV light exposure
--Dark complexion
--Younger age
--HIV negative
--Smoking

If an individual younger than 50 has OSSN, what should you do?
Check them for HIV
If a young and/or dark-complected individual is HIV(-), what predisposing condition should be considered?
Xeroderma pigmentosum
If an individual older than 50 has OSSN, what should be considered?
Pedunculated Papilloma
Sessile OSSN
Mucoepidermoid Ca
Conjunctival Neoplasms

Generally speaking, to what does the term ocular surface squamous neoplasia refer?
OSSN are a spectrum of squamous tumors of the ocular surface (both conj and cornea)

Do they all have malignant potential?
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What should you do?
Check them for HIV
Traditionally, OSSN is thought of as coming in two forms—what are they?
Traditionally, OSSN is thought of as coming in two forms—what are they? Conjunctival (or corneal) intraepithelial neoplasia (CIN), and squamous cell carcinoma (SCC)
Conjunctival Neoplasms

Traditionally, OSSN is thought of as coming in two forms—what are they?
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Can CIN be differentiated from SCC at the slit-lamp?
Conjunctival Neoplasms

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OSSN lesions typically present with one of three clinical variants with regard to their appearance—what are they?
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--?
Conjunctival Neoplasms

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OSSN lesions typically present with one of three clinical variants with regard to their appearance—what are they?
--Gelatinous
--Papilliform
--Leukoplakic
Conjunctival Neoplasms

OSSN: Clinical variants

- Papilliform
- Gelatinous
- Leukoplakic
Traditionally, OSSN is thought of as coming in two forms—what are they?
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--Papilliform
--Leukoplakic

What does OSSN look like on AS-OCT?
A segment of dramatically thickened epithelium, the edge of which changes abruptly to normal-appearing epithelium
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What does OSSN look like on AS-OCT?
A segment of dramatically thickened epithelium, the edge of which changes abruptly to normal-appearing epithelium
Conjunctival Neoplasms

A 63 year old male with OSSN.
a) Slit lamp photograph of a sessile conjunctival lesion extending to the limbus.
b) AS-OCT reveals dramatically thickened epithelium (asterisk) associated with an abrupt transition to normal epithelium (arrow)
Conjunctival Neoplasms

Which OSSN lesions should be treated as benign, and which as (potentially) malignant?
Conjunctival Neoplasms

Which OSSN lesions should be treated as benign, and which as (potentially) malignant?
All OSSN lesions should be treated as malignant!
Conjunctival Neoplasms

Which OSSN lesions should be treated as benign, and which as (potentially) malignant? **All** OSSN lesions should be treated as malignant!

Two general categories of treatment are used. **What are they?**
Conjunctival Neoplasms

Which OSSN lesions should be treated as benign, and which as (potentially) malignant? All OSSN lesions should be treated as malignant!

Two general categories of treatment are used. What are they? Surgical, and topical
Conjunctival Neoplasms

Which OSSN lesions should be treated as benign, and which as (potentially) malignant?
All OSSN lesions should be treated as malignant!

Two general categories of treatment are used. What are they?
Surgical and topical

What are the highlights of surgical excision?
--?
--?
--?
--?
Conjunctival Neoplasms

Which OSSN lesions should be treated as benign, and which as (potentially) malignant?

**All** OSSN lesions should be treated as malignant!

Two general categories of treatment are used. What are they?

**Surgical** and topical

What are the highlights of surgical excision?

--Margins should be at least 2 mm--

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Which is considered first-line, and why?
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Surgical, and topical

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--MMC
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Which is considered first-line, and why?

Interferon—it has the fewest adverse effects
Conjunctival Neoplasms

Conjunctival Neoplasms

Epithelial

Papilloma

Pedunculated

Sessile

OSSN

CIN

SCC

Mucoepidermoid Ca

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--Very rare
Conjunctival Neoplasms

Epithelial

Mucoepidermoid Ca
--Very rare
--Looks like hyper-aggressive SCC
Conjunctival Neoplasms

- **Conjunctival Neoplasms**
  - **Epithelial**
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      - Very rare
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      - Contains malignant cell type in addition to malignant squames
Conjunctival Neoplasms

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- Papilloma
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**Conjunctival Neoplasms**

<table>
<thead>
<tr>
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<tbody>
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<td>?</td>
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<tr>
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*Fill in the blanks re whether the lesion tends to be benign vs malignant*
Conjunctival Neoplasms

Fill in the blanks re whether the lesion tends to be benign vs malignant

- Pigmented
- Epithelial
- Limbal Conj: Benign
- Palpebral Conj: Malignant
Conjunctival Neoplasms

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Conjunctival Neoplasms

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*Fill in the blanks re whether the lesion tends to be *benign* vs *malignant*.*
Conjunctival Neoplasms

In anticipation of having to interpret them on the OKAP, let’s compare and contrast the AS-OCT findings for some of the conditions covered in this slide-set.
Conjunctival Neoplasms

If the AS-OCT features *cystic spaces*, think **lymphangiectasia** vs **nevus**.
Conjunctival Neoplasms

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Conjunctival Neoplasms

If the lesion appears solid, determine whether the mass is **epithelial** vs **subepithelial**.
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Conjunctival Neoplasms

If the lesion appears solid, determine whether the mass is epithelial vs subepithelial.

If its epithelial, think OSSN.
Conjunctival Neoplasms

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*The white arrow is pointing out a classic AS-OCT finding in OSSN: The sudden transition from abnormal to normal epithelium.*
Conjunctival Neoplasms

If the lesion appears solid, determine whether the mass is epithelial vs subepithelial. If it's epithelial, think OSSN. If it's subepithelial, think either lymphoma or amyloid.
Conjunctival Neoplasms

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Conjunctival Neoplasms

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**Borders:** Regular borders are found in lymphomas; irregular in amyloid

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Lymphoma?  Amyloid?  Lymphoma?  Amyloid?
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