Conjunctival Neoplasms

- Broad category
- Broad category
- Broad category
Conjunctival Neoplasms

- Lymphatic
- Melanocytic
- Epithelial
Conjunctival Neoplasms

- Lymphatic
- Melanocytic
- Epithelial

- Conjointival Neoplasms
Conjunctival Neoplasms

- Lymphatic
  - Lymphatic channel elements
  - Lymphoid cells
- Melanocytic
- 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 definition thereof

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

Conjunctival lymphangiectasia

Low mag

High mag

Conjunctival lymphangiectasia
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
   - Proliferation of channel elements
   - Present at birth
   - Enlarge slowly
   - Intralesional hemorrhage → chocolate cyst

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
Conjunctival Neoplasms

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

Conjunctival lymphangioma
Conjunctival Neoplasms

**Lymphatic channel-element neoplasias**

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

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   --Proliferation of channel elements
   --Present at birth
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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

 Similar in this regard to the chocolate cyst, another common ocular tumor.
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

*Similar in this regard to the capillary hemangioma*
Conjunctival Neoplasms

**Lymphatic channel-element neoplasias**

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   -- Irregularly dilated lymphatic channels of bulbar conjunctiva

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   -- Proliferation of channel elements
   -- Present at birth
   -- Enlarge slowly
   -- Intrallesional hemorrhage → chocolate cyst
Conjunctival Neoplasms

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

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

Conjunctival lymphangioma: Chocolate cyst
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

**Lymphoid-cell neoplasias**
1) ?
2) ?
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
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**Lymphoid-cell neoplasias**
1) Lymphoid hyperplasia
2) Lymphoma
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 $\rightarrow$ chocolate cyst

**Lymphoid-cell neoplasias**
1) Lymphoid hyperplasia
   --Minimally elevated, salmon-colored, pebbly surface (follicles)
   --Consider excision, topical steroids, RT
2) Lymphoma
   --Can be localized, or manifestation of systemic disease
   --Most patients age $>$ 50 (if younger, check for HIV)
   --Treatment: Localized $\rightarrow$ RT; systemic $\rightarrow$ chemo
Conjunctival Neoplasms

**Lymphatic channel-element neoplasias**
1) Lymphangiectasia
   --Irregularly dilated lymphatic channels of bulbar conjunctiva
2) Lymphangioma
   --Proliferation of channel elements
   --Present at birth
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Conjunctival Neoplasms

Lymphoid hyperplasia
Conjunctival Neoplasms

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**Lymphoid-cell neoplasias**
1) Lymphoid hyperplasia
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   --Consider excision, topical steroids, RT (Radiation therapy)
2) Lymphoma
Conjunctival Neoplasms

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Conjunctival Neoplasms

Conjunctival lymphoma
**Conjunctival Neoplasms**

**Lymphatic channel-element neoplasias**
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   --Most patients age >40 (if younger, check for dz)
Conjunctival Neoplasms

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Conjunctival Neoplasms

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   --Consider excision, topical steroids, RT
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   --Can be localized, or manifestation of systemic disease
   --Most patients age > 50 (if younger, check for HIV)
   --Treatment: Localized → **local RT**; systemic → **systemic chemo**
Lymphatic channel-element neoplasias
1) Lymphangiectasia
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Conjunctival Neoplasms

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   -- Most patients age > 50 (if younger, check for HIV)
   -- Treatment: Localized → RT; systemic → chemo

How does lymphoma appear on AS-OCT?

As a smooth-bordered, elevated subepithelial lesion with a homogeneously 'stippled' appearance.
Conjunctival Neoplasms

Lymphatic channel-element neoplasias
1) Lymphangiectasia
   --Irregularly dilated lymphatic channels of bulbar conjunctiva
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   --Proliferation of channel elements
   --Present at birth
   --Enlarge slowly
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How does lymphoma appear on AS-OCT?
As a smooth-bordered, elevated subepithelial 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 monomorphic, stippled, dot-like infiltrates corresponding to the infiltration of monoclonal lymphocytes.
**Conjunctival Neoplasms**

**Lymphatic channel-element neoplasias**
1) Lymphangiectasia
   --Irregularly dilated lymphatic channels of bulbar conjunctiva
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   --Proliferation of channel elements
   --Present at birth
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Conjunctival Neoplasms

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   --Present at birth
   --Enlarge slowly
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   --Consider excision, topical steroids, RT
2) Lymphoma
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   --Most patients age > 50 (if younger, check for HIV)
   --Treatment: Localized → RT ; systemic → chemo
**Conjunctival Neoplasms**

**Lymphatic channel-element neoplasias**
1) Lympangioiectasia
   --Irregularly dilated lymphatic channels of bulbar conjunctiva
2) Lymphangioma
   --Proliferation of channel elements
   --Present at birth
   --Enlarge slowly
   --Intralesional hemorrhage → chocolate cyst

**Lymphoid-cell neoplasias**
1) Lymphoid hyperplasia
   --Minimally elevated, salmon-colored, pebbly surface (follicles)
   --Consider excision, topical steroids, RT
2) Lymphoma
   --Can be localized, or manifestation of systemic disease
   --Most patients age > 50 (if younger, check for HIV)
   --Treatment: Localized → RT ; systemic → chemo

*Cannot be differentiated clinically—only via biopsy
B v T cell*
Conjunctival Neoplasms

**Lymphatic channel-element neoplasias**

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   --Irregularly dilated lymphatic channels of bulbar conjunctiva

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

**Lymphoid-cell neoplasias**

1) Lymphoid hyperplasia
   --Minimally elevated, salmon-colored, pebbly surface (follicles)
   --Consider excision, topical steroids, RT

2) Lymphoma
   --Can be localized, or manifestation of systemic disease
   --Most patients age > 50 (if younger, check for HIV)
   --Treatment: Localized → RT; systemic → chemo

Cannot be differentiated clinically--only via biopsy
--Both are usually B-cells
Conjunctival Neoplasms

Lymphatic channel-element neoplasias
1) Lymphangiectasia
   --Irregularly dilated lymphatic channels of bulbar conjunctiva
2) Lymphangioma
   --Proliferation of channel elements
   --Present at birth
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   --Intralesional hemorrhage → chocolate cyst

Lymphoid-cell neoplasias
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   --Minimally elevated, salmon-colored, pebbly surface (follicles)
   --Consider excision, topical steroids, RT
2) Lymphoma
   --Can be localized, or manifestation of systemic disease
   --Most patients age > 50 (if younger, check for HIV)
   --Treatment: Localized → RT ; systemic → chemo

Cannot be differentiated clinically--only via biopsy
--Both are usually B-cells
--Both can be mistaken for
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
   - Intralocular hemorrhage → chocolate cyst

**Lymphoid-cell neoplasias**

1) **Lymphoid hyperplasia**
   - Minimally elevated, salmon-colored, pebbly surface (follicles)
   - Consider excision, topical steroids, RT

2) **Lymphoma**
   - Can be localized, or manifestation of systemic disease
   - Most patients age > 50 (if younger, check for HIV)
   - Treatment: Localized → RT; systemic → chemo

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

**Lymphoid-cell neoplasias**

1) Lymphoid hyperplasia
   --Minimally elevated, salmon-colored, pebbly surface (follicles)
   --Consider excision, topical steroids, RT

2) Lymphoma
   --Can be localized, or manifestation of systemic disease
   --Most patients age > 50 (if younger, check for HIV)
   --Treatment: Localized RT → chemo
   --Systemic

**How does amyloid appear on AS-OCT?**

- Like lymphoma, as an elevated subepi lesion
- However, its borders are irregular, not smooth
- Rather than having a homogeneous 'stippled' appearance, an amyloid lesion is more heterogeneous, and contains linear infiltrates

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

Lymphatic channel elements

Lymphoid cells

Conjunctival Neoplasms
Conjunctival Neoplasms

**Lymphatic channel-element neoplasias**
1) Lymphangiectasia
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2) Lymphangioma
   --Proliferation of channel elements
   --Present at birth
   --Enlarge slowly
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**Lymphoid-cell neoplasias**
1) Lymphoid hyperplasia
   --Minimally elevated, salmon-colored, pebbly surface (follicles)
   --Consider excision, topical steroids, RT

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

How does amyloid appear on AS-OCT?
Like lymphoma, as an elevated subepi lesion

Lymphoid-cell neoplasias
1) Lymphoma
   --Can be localized, or manifestation of systemic disease
   --Most patients age > 50 (if younger, check for HIV)
   --Treatment: Localized → RT; systemic → chemo

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

Lymphatic channel-element neoplasias
1) Lymphangiectasia
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Lymphoid-cell neoplasias
1) Lymphoid hyperplasia
   --Minimally elevated, salmon-colored, pebbly surface (follicles)
   --Consider excision, topical steroids, RT
2) Lymphoma
   --Can be localized, or manifestation of systemic disease
   --Most patients age > 50 (if younger, check for HIV)
   --Treatment: Localized → RT; systemic → chemo

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

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

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).
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

Lymphatic channel-element neoplasias

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

2) Lymphangioma
   --Proliferation of channel elements
   --Present at birth
   --Enlarge slowly
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Lymphoid-cell neoplasias

1) Lymphoid hyperplasia
   --Minimally elevated, salmon-colored, pebbly surface (follicles)
   --Consider excision, topical steroids, RT

2) Lymphoma
   --Can be localized, or manifestation of systemic disease
   --Most patients age > 50 (if younger, check for HIV)
   --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!
Conjunctival Neoplasms

- Lymphatic
- Melanocytic
- Epithelial
Conjunctival Neoplasms

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

- **Benign**
  1) 
  2) 
  3) 

**Melanocytic**

- Benign
- Premalignant
- Malignant
Conjunctival Neoplasms

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

Melanocytic

Premalignant

Malignant
Conjunctival Neoplasms

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

Freckles and CAM share what histologic quality?

**Premalignant**

**Malignant**

---

*Benign*

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

---

Conjunctival Neoplasms

Melanocytic
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

---

**Melanocytic**

---

*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)
2) Complexion-associated melanosis
3) Nevus

Who is prone to developing CAM?

Conjunctival Neoplasms

Melanocytic

Who is prone to developing CAM?

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

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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3) Nevus

Who is prone to developing CAM?
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Conjunctival Neoplasms

**Benign**
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**Conjunctival Neoplasms**

**Melanocytic**

*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

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
Conjunctival Neoplasms

CAM: Perilimbal involvement
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 commonly associated with more darkly pigmented peoples

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

**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

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

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?

Melanocytic

Conjunctival Neoplasms
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 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)
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

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?
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?
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
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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?
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?
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Bilateral (and fairly symmetrically so)

Can the palpebral conj be involved? The caruncle? The cornea?!!
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Bilateral (and fairly symmetrically so)

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Yes. Yes. Yes—it’s called two words
Conjunctival Neoplasms

**Benign**
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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

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2) Complexion-associated melanosis
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What is its malignant potential?
Conjunctival Neoplasms

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What is its malignant potential? Essentially none
Conjunctival Neoplasms

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Conjunctival Neoplasms

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

**Melanocytic**

*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?*

*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.

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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.
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?

**Melanocytic**

**Benign**
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**

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What’s the difference between melanocytes and nevus cells?
Conjunctival Neoplasms

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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

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--They are round (not dendritic in shape like other melanocytes)
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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

**Melanocytic**

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

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

**Conjunctival Neoplasms**

- **Melanocytic**
  - **Benign**
  - **Premalignant**
  - **Malignant**
Conjunctival Neoplasms

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

**Melanocytic**

**Benign** → **Premalignant** → **Malignant**
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

**Melanocytic**

**Conjunctival Neoplasms**

- Benign
- 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

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3) Nevus
   --Is a hamartoma
   --Progress from junctional nevus → compound nevus → subepithelial nevus
   --1/2 contain epithelial inclusion cysts

- Benign
- Premalignant
- Malignant
Conjunctival Neoplasms

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**Melanocytic**

- 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. **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**

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   --1/2 contain epithelial inclusion cysts
   --Goblet cells in cyst secrete mucin → lesion enlarges → false impression of malignant transformation.

**Conjunctival Neoplasms**

**Melanocytic**

**Benign**

**Premalignant**

**Malignant**

---

**Stuff**

---

**Bad thing**
Conjunctival Neoplasms

**Benign**
1) Freckle (ephelis)
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   --Is a hamartoma
   --Progress from *junctional* nevus → *compound* nevus → *subepithelial* nevus
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**Conjunctival Neoplasms**

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   --Goblet cells in cyst secrete mucin → lesion enlarges → false impression of malignant transformation
   --Rapid enlargement during teens is uncommon, worrisome for malignant change

**Premalignant**

**Malignant**
Conjunctival Neoplasms

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

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

Pregnancy
Conjunctival Neoplasms

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**Melanocytic**
- Premalignant
- Malignant

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

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**Melanocytic**

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

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

Conjunctival Neoplasms

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**Melanocytic**

Premalignant

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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
- --
- --

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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**Melanocytic**

**Premalignant**

---

**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

---

**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
Conjunctival Neoplasms

Conjunctival nevus: Typical locations

- Juxtalimbal
- Plica
- Caruncle
Conjunctival Neoplasms

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**Melanocytic**

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

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Are they usually unilateral, or bilateral?
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Melanocytic
Premalignant
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Conjunctival Neoplasms
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**Melanocytic**

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Conjunctival Neoplasms

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**Melanocytic Neoplasms**

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The first or second decade

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

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Yes—about 1/3 are nearly devoid of pigment
Conjunctival Neoplasms

Conjunctival nevus: Nonpigmented
Conjunctival Neoplasms

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   --1/2 contain epithelial inclusion cysts
   --Goblet cells in cyst secrete mucin $\rightarrow$ lesion enlarges $\rightarrow$ false impression of malignant transformation
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During what period of life do conj nevi typically appear?
The first or second decade

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

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**Conjunctival Neoplasms**

**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**
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**Melanocytic**

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Conjunctival Neoplasms

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Conjunctival Neoplasms

Melanocytic
Premalignant
Malignant

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

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

**Premalignant**

**Malignant**

---

- **Pre-malignant**
  - Skin analog: Lentigo maligna
  - Cystic? No
  - Bilateral? No
  - 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!

- **Benign**

---

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

- 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
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.
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?

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

--?

--?

--?
Conjunctival Neoplasms

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--- Premalignant

--- Malignant
Conjunctival Neoplasms

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*PAM comes in two basic forms—what are they?*
--PAM without atypia
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Conjunctival Neoplasms

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PAM (primary acquired melanosis)

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

---

**PAM without atypia:**
- 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.

---

**Premalignant**

**Malignant**
Conjunctival Neoplasms

PAM (primary acquired melanosis)

- **Pre-malignant**
- **Malignant**

**Premalignant**

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There's a simple, commonsense reason why PAM can carry a significant malignancy risk. What is it?
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**PAM comes in two basic forms—what are they? How does each behave?**
--PAM without atypia: The proliferating melanocytes are confined to the basal epithelial layer, **and** lack atypical features
--PAM with atypia: ?
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? How does each behave?

--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

**Conjunctival**

Pre-malignant

PAM (primary acquired melanosis)

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

---

Premalignant

Malignant
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.

Pre-malignant

PAM (primary acquired melanosis)

Premalignant

Malignant
Conjunctival Neoplasms

**Pre-malignant**

PAM (primary acquired melanosis)

---

**Conjunctival Neoplasms**

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Conjunctival Neoplasms

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

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Conjunctival Neoplasms

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---
Conjunctival Neoplasms

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- **PAM without atypia**: The proliferating melanocytes are confined to the basal epithelial layer, and lack atypical features.
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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.

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

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

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?

- **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.

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

**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 without atypia has proliferating melanocytes confined to the basal epithelial layer, and lack atypical features.

---PAM with atypia

PAM with atypia has proliferating melanocytes that migrate into more superficial epithelial layers, and display 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

---

Conjunctival Neoplasms

Melanocytic

Pre-malignant

--Skin analog:

Benign

Premalignant

Malignant

---

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

**Benign**

**Premalignant**

**Malignant**

--Skin analog: Lentigo maligna

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
  - Cystic? (Y/N)

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

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

**Conjunctival Neoplasms**

**Melanocytic**

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

Risk factors: White; middle-aged; fair complexion

Management:
- **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

**Conjunctival Neoplasms**

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

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

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

**Pre-malignant**
- 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
  - Cystic? YES

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

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

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

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

**Pre-malignant**

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

Conjunctival Neoplasms

Melanocytic

Benign

Premalignant

Malignant
Conjunctival Neoplasms

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

**Conjunctival Neoplasms**

**Melanocytic**

**Benign**

**Premalignant**

**Malignant**
Conjunctival Neoplasms

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

**Melanocytic**
- Benign
- Premalignant
- Malignant

**Conjunctival Neoplasms**
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**

**Melanocytic**

**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 ↑ size, nodularity, ↑ vascularity

**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 ↑ 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
Conjunctival Neoplasms

**Premalignant**

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

**Benign**

*(ie, the presence of ‘feeder vessels’)*

**Malignant**

↑ 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

**Benign**

**Premalignant**

**Malignant**

(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,
Conjunctival Neoplasms

**Conjunctival Neoplasms**

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

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

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Conjunctival Neoplasms

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**Melanocytic**

**Premalignant**

**Benign**

**Malignant**
Conjunctival Neoplasms

**Melanocytic**

- Benign
- Premalignant
- Malignant

**Malignant 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

**Are all conj melanomas pigmented?**
Conjunctival Neoplasms

Melanocytic

Benign
Premalignant
Malignant

Malignant Melanoma

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

Conjunctival Neoplasms

Melanocytic

Benign

Premalignant

Malignant

Malignant Melanoma

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

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
deo novo < not de novo

Management:

Excisional biopsy (no ↑ risk of mets)—Exenterate if orbital—Check for lymphadenopathy

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

- Melanocytic
  - Benign
  - Premalignant
  - Malignant Melanoma

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

- Malignant Melanoma
  - Metastasize?
  - Yes
  - Prevalence: 1 per 2 million whites
  - Arise from PAM, acquired nevi, 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
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A certain subpopulation of conj melanomas are especially likely to be amelanotic—which population is that?
Conjunctival Neoplasms

Conjunctival Neoplasms

Melanocytic

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

-- 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:
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    -- By location: Bulbar > nonbulbar
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Are all conj melanomas pigmented? No—25% are amelanotic!
Conjunctival Neoplasms

**Melanocytic**
- Benign
- Premalignant
- Malignant Melanoma

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

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Does it matter whether the original melanoma was pigmented?
Conjunctival Neoplasms

Conjunctival Neoplasms

Melanocytic

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

**Melanocytic**
- **Benign**
- **Premalignant**
- **Malignant**
  - **Malignant 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
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    - Management:
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Conjunctival Neoplasms

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

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

- **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

- Melanocytic
  - 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

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Skin, by well over an order of magnitude
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Which is more common, conj melanoma or choroidal melanoma?
Conjunctival Neoplasms

**Conjunctival Neoplasms**

**Melanocytic**

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

**Malignant Melanoma**

---Prevalence 1 per 2 million whites

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Conjunctival Neoplasms

- **Melanocytic**
  - **Benign**
  - **Premalignant**
  - **Malignant**
    - **Melanoma**
      --Prevalence 1 per 2 million whites

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Conjunctival Neoplasms

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Conjunctival Neoplasms

Conjunctival Neoplasms

Melanocytic

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

Melanocytic

Benign

Premalignant

Malignant

Malignant Melanoma
--Prevalence 1 per 2 million whites

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Yes, but at rates that are an order of magnitude less than 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

Conjunctival Neoplasms

Melanocytic

Benign

Premalignant

Malignant

Malignant

Melanoma

--Prevalence 1 per 2 million whites

Is there a gender predilection?

Is there a gender predilection?

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

--Prognosis:
--Better than cutaneous
--By location: Bulbar > nonbulbar
Limbal > nonlimbal
denovo < not denovo

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

**Melanocytic**

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

**Malignant**

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

**Is there a gender predilection?**

- **No**
 Conjunctival Neoplasms

- Melanocytic
  - Benign
  - Premalignant
  - Malignant

Malignant
Melanoma
--Prevalence 1 per 2 million whites

Is there a gender predilection?
No

Is there an age predilection?
Conjunctival Neoplasms

**Melanocytic**

- **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

**Melanocytic**

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

**Malignant**

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

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

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

Conjunctival Neoplasms

Melanocytic

Benign

Premalignant

Malignant

Malignant

Melanoma

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

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

Melanocytic

- 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**

- **Melanocytic**
  - 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

**Melanocytic**

- **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?**
 Conjunctival Neoplasms

Conjunctival Neoplasms

Malignant

Benign

Premalignant

Melanocytic

Malignant Melanoma

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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

**Melanocytic**

- **Benign**
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**Malignant**

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

**Conjunctival Neoplasms**

- **Premalignant**
  - Benign
  - Malignant

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

**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

**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

**Concern for the ‘no touch’ technique:**
- The concern is that intraop manipulation of the lesion might seed tumor cells across the normal conjunctiva.

**Alternative to excisional biopsy:**
- Incisional biopsy
Conjunctival Neoplasms

Conjunctival Neoplasms

Melanocytic

**Conjunctival Neoplasms**

**Melanocytic**

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**Conjunctival Neoplasms**

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Conjunctival Neoplasms

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[Diagram: Conjunctival Neoplasms → Melanocytic]
Conjunctival Neoplasms

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  - Check for... uh-oh
Conjunctival Neoplasms

**Conjunctival Neoplasms**

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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?

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

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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.
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.
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What about a fornical ‘nevus’?
Conjunctival Neoplasms

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.

What about a forniceal ‘nevus’? Same rule applies
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?
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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 fornical/palpebral conj. They are of no clinical significance and do not need excision.
Conjunctival Neoplasms

Adrenochrome deposits
Conjunctival Neoplasms

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
- Melanocytic
- Epithelial
  - ?
  - ?
  - ?
  - ?
Conjunctival Neoplasms

- Lymphatic
- Melanocytic
- Epithelial
  - Papilloma
  - OSSN
  - Mucoepidermoid Ca

OSSN = Ocular surface squamous neoplasia
Conjunctival Neoplasms

What is the etiology of conj papillomas?
Conjunctival Neoplasms

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

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

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Verrucae (ie, warts)
Conjunctival Neoplasms

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

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

Mucoepidermoid Ca
Conjunctival Neoplasms

- Lymphatic
- Melanocytic
- Epithelial

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

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Cervical cancer
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

Mucoepidermoid Ca

OSSN

Pedunculated

Sessile

Papilloma

Conjunctival Neoplasms

Lymphatic

Melanocytic

Epithelial
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>
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<tbody>
<tr>
<td>Pedunculated</td>
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<td>Sessile</td>
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## Conjunctival Neoplasms

### Epithelial Neoplasms

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**Note:** *OSSN* - Oral Submucosal Squamous Nevus.
## Conjunctival Neoplasms

### Epithelial Neoplasms

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

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

**Epithelial**

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Conjunctival Neoplasms

Conjunctival Neoplasms

Epithelial

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Papilloma HPV subtype Location Appearance Malignant potential?

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Sessile 16, 18 Limbus Yes Adulthood
### Conjunctival Neoplasms

**Epithelial**

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OSSN

HPV subtype Location Appearance Malignant potential? Age at presentation

Pedunculated

Sessile

Pedunculated

Sessile

Mucoepidermoid Ca

Conjunctival Neoplasms
# Conjunctival Neoplasms

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## Conjunctival Neoplasms

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**Epithelial**

- **Papilloma**
  - Pedunculated
  - Sessile

**OSSN**

- Papilloma HPV subtype:
  - Location: Inferior fornix
  - Appearance: On a stalk
  - Malignant potential?: None
  - Age at presentation: Childhood

- Sessile:
  - Location: Limbus
  - Appearance: Flat, ‘strawberry’
  - Malignant potential?: Yes
  - Age at presentation: Adulthood
Conjunctival Neoplasms

Conjunctival Neoplasms

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Conjunctival Neoplasms

Conjunctival Neoplasms

Epithelial

Papilloma

Pedunculated
Sessile

OSSN

Mucoepidermoid Ca

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

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

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

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

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!)  
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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 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
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

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Mucoepidermoid Ca
Conjunctival Neoplasms

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

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

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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

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

Generally speaking, to what does the term ocular surface squamous neoplasia refer?
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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 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)

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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+ --?
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
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+--Smoking

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

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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? Check them for HIV
Conjunctival Neoplasms

Generally speaking, to what does the term ocular surface squamous neoplasia refer?
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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
--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?
Conjunctival Neoplasms

Generally speaking, to what does the term ocular surface squamous neoplasia refer?
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There are a number of risk factors for the development of OSSN—what are they?
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--HIV+?
--Smoking

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

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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
--Smoking

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

If a young and/or dark-completed individual is HIV(-), what predisposing condition should be considered?
Xeroderma pigmentosum

If a dark-skinned individual has OSSN, what should you do?
Check them for HIV

--HIV negative

--Smoking
Conjunctival Neoplasms

Conjunctival Neoplasms

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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?
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Conjunctival Neoplasms

Traditionally, OSSN is thought of as coming in two forms—what are they?
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Conjunctival (or corneal) intraepithelial neoplasia (CIN), and squamous cell carcinoma (SCC)

Can CIN be differentiated from SCC at the slit-lamp?
Conjunctival Neoplasms

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Can CIN be differentiated from SCC at the slit-lamp?
No, only via histology (which is why the CNN/SCC classification is not terribly useful clinically)
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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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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
Conjunctival Neoplasms

Traditionally, OSSN is thought of as coming in two forms—what are they?
Conjunctival (or corneal) intraepithelial neoplasia (CIN), and squamous cell carcinoma (SCC)

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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

What does OSSN look like on AS-OCT?
A segment of dramatically thickened epithelium, the edge of which changes abruptly to normal-appearing epithelium.
Traditionally, OSSN is thought of as coming in two forms—what are they?
Conjunctival (or corneal) intraepithelial neoplasia (CIN), and squamous cell carcinoma (SCC)

Can CIN be differentiated from SCC at the slit-lamp?
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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

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

What are the highlights of surgical excision?
- ?
- ?
- ?
- ?
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
--?
--?
--?
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
--?
--?
--?
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
--- Margins should be
--- ?
--- ?

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

--- OSSN
--- CIN
--- SCC

--- Mucoepidermoid Ca
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
--Margins should be cryo’d
--?
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
--Margins should be cryo’d
--If the lesion involves the cornea, scrape it
--?
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
--Margins should be cryo’d
--If the lesion involves the cornea, scrape it
--Consider lamellar sclerectomy of the scleral bed
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
--Margins should be cryo'd
--If the lesion involves the cornea, scrape it
--Consider lamellar sclerectomy of the scleral bed
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 three topical meds?
--?
--?
--?
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All OSSN lesions should be treated as malignant!

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

What are the three topical meds?
-- Interferon
-- MMC
-- 5-FU

---

**Conjunctival Neoplasms**

---

**Epithelial**

---

**OSSN**

---

**CIN**

---

**SCC**

---

**Mucoepidermoid Ca**
Conjunctival Neoplasms

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Surgical, and topical

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Which is considered first-line, and why?
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 three topical meds? --Interferon --MMC --5-FU

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

--Very rare
Conjunctival Neoplasms

Conjunctival Neoplasms

Epithelial

Papilloma
- Pedunculated
- Sessile

OSSN

CIN

SCC

Mucoepidermoid Ca

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

**Epithelial**

- Papilloma
  - Pedunculated
  - Sessile

- OSSN
  - CIN
  - SCC

**Mucoepidermoid Ca**

- Very rare
- Looks like hyper-aggressive SCC
- Contains malignant cell type in addition to malignant squames
Conjunctival Neoplasms

Mucoepidermoid Ca
--Very rare
--Looks like hyper-aggressive SCC
--Contains malignant goblet cells in addition to malignant squames

Epithelial

OSSN

CIN

SCC

Pedunculated Papilloma

Mucoepidermoid Ca

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

<table>
<thead>
<tr>
<th></th>
<th>Melanocytic</th>
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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

Conjunctival Neoplasms

Melanocytic

Limbal Conj
- Benign

Palpebral Conj
- Malignant

Epithelial

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

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

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

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

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

Lesion is...subepithelial

Lesion is...subepithelial

Lesion is...epithelial

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

If the lesion appears solid, determine whether the mass is **epithelial** vs **subepithelial**. If its epithelial, think **OSSN**.
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:
(Which is…)

OSSN
Conjunctival Neoplasms

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

If its epithelial, think OSSN.

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 its epithelial, think **OSSN**. If it’s subepithelial, think either **lymphoma** or **amyloid**.
Conjunctival Neoplasms

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

To determine whether a subepi lesion is lymphoma vs amyloid, evaluate the lesion’s:

- Borders
- Homogeneity

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Conjunctival Neoplasms

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

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To determine whether a subepithelial lesion is lymphoma vs amyloid, evaluate the lesion's:
Borders
and
Homogeneity
Conjunctival Neoplasms

To determine whether a subepithelial lesion is lymphoma vs amyloid, evaluate the lesion’s:
Borders: Regular borders are found in lymphoma; irregular in amyloid
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**Borders**: Regular borders are found in lymphomas; irregular in amyloid

**Homogeneity**: Lymphomas are homogeneous (their interiors are described as 'stippled'); amyloid is heterogeneous.

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Conjunctival Neoplasms

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_and_

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Conjunctival Neoplasms

Based on these characteristics, it’s clear the above lesions are...

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