

Q

Choroidal Nevus



- Choroidal nevi are found in ~ of the population

A

Choroidal Nevus



- Choroidal nevi are found in ~ 10% of the population

Q

Choroidal Nevus



- **Choroidal nevi** are found in ~ 10% of the population

What is the ophthalmoscopic appearance of a typical choroidal nevus with respect to...

Color?

A

Choroidal Nevus



- **Choroidal nevi** are found in ~ 10% of the population

What is the ophthalmoscopic appearance of a typical choroidal nevus with respect to...

*Color? **Gray-brown***

Choroidal Nevus



Choroidal nevus: Typical color



Q

Choroidal Nevus



- **Choroidal nevi** are found in ~ 10% of the population

What is the ophthalmoscopic appearance of a typical choroidal nevus with respect to...

~~Color? Gray brown~~ Amelanotic?

Can choroidal nevi be amelanotic?

A

Choroidal Nevus



- **Choroidal nevi** are found in ~ 10% of the population

What is the ophthalmoscopic appearance of a typical choroidal nevus with respect to...

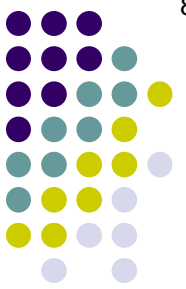
~~Color? Gray brown~~ Amelanotic? Yes!

Can choroidal nevi be amelanotic?
Yes

Choroidal Nevus



Choroidal nevus: Amelanotic



Q

Choroidal Nevus



- **Choroidal nevi** are found in ~ 10% of the population

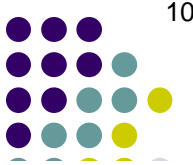
What is the ophthalmoscopic appearance of a typical choroidal nevus with respect to...

*Color? **Gray-brown***

Margins?

A

Choroidal Nevus

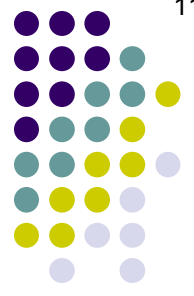


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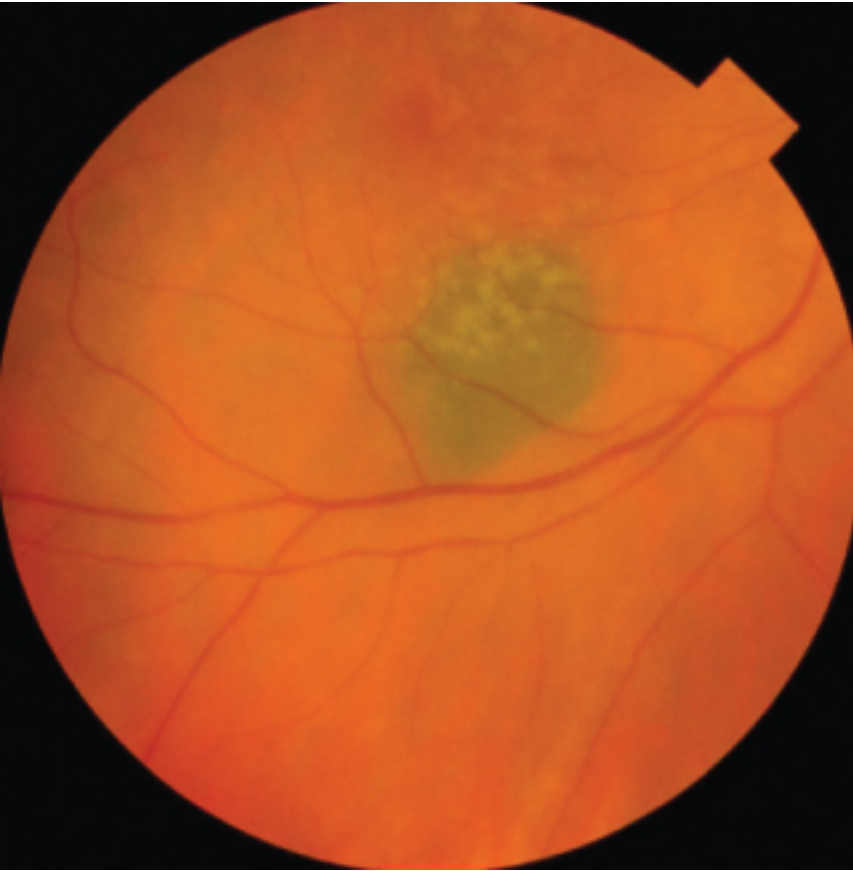
What is the ophthalmoscopic appearance of a typical choroidal nevus with respect to...

Color? **Gray-brown**

Margins? **Indistinct**



Choroidal Nevus



Choroidal nevus: **Indistinct margins**

Q

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- **Choroidal nevi** are found in ~ 10% of the population

What is the ophthalmoscopic appearance of a typical choroidal nevus with respect to...

*Color? **Gray-brown***

*Margins? **Indistinct***

Elevation?

A

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What is the ophthalmoscopic appearance of a typical choroidal nevus with respect to...

Color? **Gray-brown**

Margins? **Indistinct**

Elevation? Flat (or only minimally elevated)

Q

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- Choroidal nevi are found in ~ 10% of the population
- Which clinical factor is pathognomonic for whether a melanocytic lesion is benign or malignant?

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- Choroidal nevi are found in ~ 10% of the population
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- Choroidal nevi are found in ~ 10% of the population
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- Lesion thickness and malignancy:
 - Virtually all lesions < 3 mm thick are benign nevi

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- Other features of a pigmented lesion that make you worry it's actually a melanoma:
 - Presence of color pigmentation



A

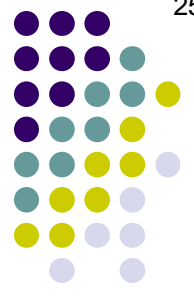
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- Lesion diameter and malignancy: A flat lesion less than **10 mm** in diameter is almost always benign
- Other features of a pigmented lesion that make you worry it's actually a melanoma:
 - Presence of **orange** pigmentation

Choroidal Nevus



Choroidal melanoma with orange pigment and subretinal fluid



Choroidal Nevus



Choroidal melanoma with orange pigment



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 - Presence of **orange pigmentation**

What is the name of the orange-pigmented substance?



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What is the name of the orange-pigmented substance?
Lipofuscin



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Lipofuscin

Why is it worrisome?



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What is the name of the orange-pigmented substance?
Lipofuscin

Why is it worrisome?
It indicates the lesion is actively growing



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- Lesion diameter and malignancy: A flat lesion less than **10 mm** in diameter is almost always benign
- Other features of a pigmented lesion that make you worry it's actually a melanoma:
 - Presence of **orange** pigmentation
 - Absence of common DFE finding



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- Other features of a pigmented lesion that make you worry it's actually a melanoma:
 - Presence of **orange** pigmentation
 - Absence of **drusen**



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That the absence of drusen is worrisome for melanoma suggests that the presence of drusen is the opposite, ie, that drusen are a reassuring finding. Is this the case?

less
gn
ke you

- Absence of drusen



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Indeed it is

less
ign
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Choroidal Nevus



Choroidal nevus with drusen



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Indeed it is

Why is the presence of drusen suggestive that a melanocytic lesion is benign?

- **Absence of drusen**



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Indeed it is

Why is the presence of drusen suggestive that a melanocytic lesion is benign?

It indicates the lesion is chronic—that it's been around a long time

- **Absence of drusen**



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- Other features of a pigmented lesion that make you worry it's actually a melanoma:
 - Presence of orange pigmentation
 - Absence of drusen
 - Presence of subretinal

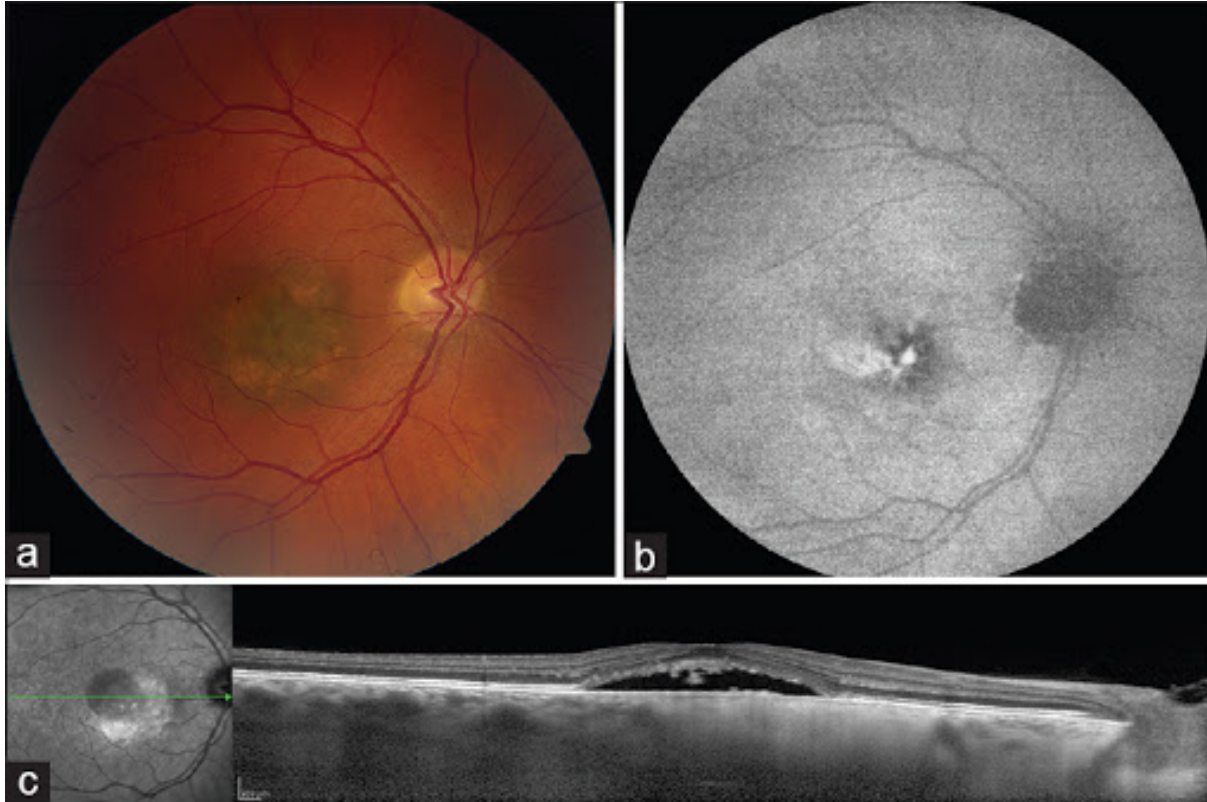


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 - Presence of orange pigmentation
 - Absence of drusen
 - Presence of subretinal fluid

Choroidal Nevus



- (a) The right fundus showed a small pigmented submacular mass with prominent overlying orange pigment and shallow subretinal fluid, consistent with small choroidal melanoma.
- (b) Autofluorescence photography documenting hyperautofluorescence of overlying lipofuscin.
- (c) Spectral domain optical coherence tomography showing subfoveal fluid



Q

Choroidal Nevus

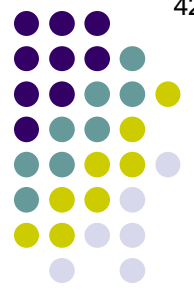
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 - Presence of **orange** pigmentation
 - Absence of **drusen**
 - Presence of subretinal **fluid**
 - Location adjacent to structure



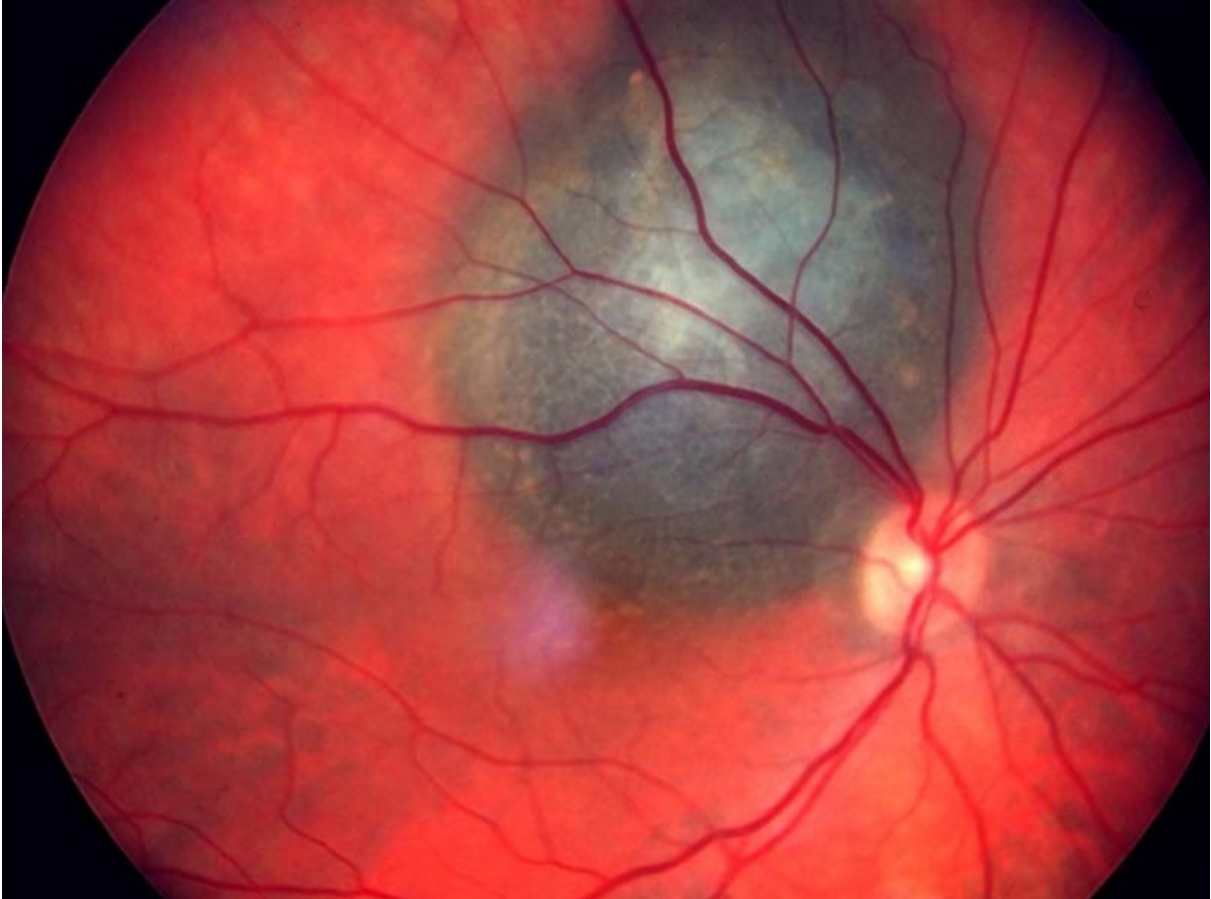
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- Lesion diameter and malignancy: A flat lesion less than **10 mm** in diameter is almost always benign
- Other features of a pigmented lesion that make you worry it's actually a melanoma:
 - Presence of **orange** pigmentation
 - Absence of **drusen**
 - Presence of subretinal **fluid**
 - Location adjacent to **ONH** (*ONH = optic nerve head*)



Choroidal Nevus



Choroidal melanoma abutting ONH



Q

Choroidal Nevus

- (Referring to Drs. [Jerry and Carol Shields](#) of the Wills Eye Hospital in Philadelphia.)
- Which clinical factor is pathognomonic for whether a melanoma? **None!**
- The Drs. Shields suggest the following mnemonic for features worrisome for ocular melanoma:
 - Virtually all lesions > 5 mm thick are melanomas
 - Virtually all lesions > 5 mm thick are melanomas
- Lesion diameter and malignancy: A flat lesion less than **10 mm** in diameter is almost always benign
- Other features of a pigmented lesion that make you worry it's actually a melanoma:
 - **Presence of orange pigmentation**
 - Absence of drusen
 - **Presence of subretinal fluid**
 - **Location adjacent to ONH**



A

Choroidal Nevus

- Choroidal nevi are found in ~ 10% of the population
- Which clinical factor is pathognomonic for whether a melanoma? *None!*
- Lesion thickness
 - The Drs. Shields suggest the following mnemonic for features worrisome for ocular melanoma:
 - “To Find Small Ocular Melanomas, Use Helpful Hints Daily”
 - Virtually all lesions > 5 mm thick are melanomas
- Lesion diameter and malignancy: A flat lesion less than 10 mm in diameter is almost always benign
- Other features of a pigmented lesion that make you worry it's actually a melanoma:
 - Presence of orange pigmentation
 - Absence of drusen
 - Presence of subretinal fluid
 - Location adjacent to ONH



Q

Choroidal Nevus

- Choroidal nevi are found in ~ 10% of the population
- **T** Clinical factor is pathognomonic for whether a melanoma or nevus
- The Drs. Shields suggest the following mnemonic for features worrisome for ocular melanoma:
 - “**To Find Small Ocular Melanomas, Use Helpful Hints Daily**”
- Virtually all lesions > 5 mm thick are melanomas
- Lesion diameter and malignancy: A flat lesion less than 10 mm in diameter is almost always benign
- Other features of a pigmented lesion that make you worry it's actually a melanoma:
 - Presence of orange pigmentation
 - Absence of drusen
 - Presence of subretinal fluid
 - Location adjacent to ONH

None!



A

Choroidal Nevus

- Choroidal nevi are found in ~ 10% of the population

Thickness >2mm

The Drs. Shields suggest the following mnemonic for features worrisome for ocular melanoma:

**“To Find Small Ocular Melanomas,
Use Helpful Hints Daily”**

- Lesion thickness: A thickness of **2 mm or greater** is worrisome for melanoma. **None!**
 - Virtually all lesions **> 5 mm** thick are melanomas
- Lesion diameter and malignancy: A flat lesion less than **10 mm** in diameter is almost always benign
- Other features of a pigmented lesion that make you worry it's actually a melanoma:
 - Presence of **orange** pigmentation
 - Absence of **drusen**
 - Presence of **subretinal fluid**
 - Location adjacent to **ONH**



Q

Choroidal Nevus

- Choroidal nevi are found in ~ 10% of the population
- Lesion thickness is a clinical factor is pathognomonic for whether a melanoma or not. **None!**
- The Drs. Shields suggest the following mnemonic for features worrisome for ocular melanoma:
 - “To Find Small Ocular Melanomas, Use Helpful Hints Daily”
- Virtually all lesions > 5mm thick are melanomas
- Lesion diameter and malignancy: A flat lesion less than 10 mm in diameter is almost always benign
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 - Presence of orange pigmentation
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 - Presence of subretinal fluid
 - Location adjacent to ONH

F

Thickness >2mm

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A

Choroidal Nevus

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- Clinical factor is pathognomonic for whether a melanoma
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 - “To Find Small Ocular Melanomas, Use Helpful Hints Daily”
- Lesion thickness
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- Lesion diameter and malignancy: A flat lesion less than 10 mm in diameter is almost always benign
- Other features of a pigmented lesion that make you worry it's actually a melanoma:
 - Presence of orange pigmentation
 - Absence of drusen
 - Presence of subretinal fluid
 - Location adjacent to ONH

Fluid present

Thickness >2mm

The Drs. Shields suggest the following mnemonic for features worrisome for ocular melanoma:

“To Find Small Ocular Melanomas,
Use Helpful Hints Daily”

None!



Q

Choroidal Nevus

S

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- Other features of a pigmented lesion that make you worry it's actually a melanoma:
 - Presence of orange pigmentation
 - Absence of drusen
 - Presence of subretinal fluid
 - Location adjacent to ONH

Fluid present

Thickness >2mm

The Drs. Shields suggest the following mnemonic for features worrisome for ocular melanoma:

**“To Find Small Ocular Melanomas,
Use Helpful Hints Daily”**

None!



A

Choroidal Nevus

Symptomatic

Fluid present

Thickness >2mm

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- The clinical factor is pathognomonic for whether a melanoma or nevus. *None!*
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 - Presence of subretinal fluid
 - Location adjacent to ONH



Q

Symptomatic

- Choroid thickness >2mm
- What symptoms associated with a melanocytic lesion would make you worry the lesion is a melanoma? **None!**
- The Drs. Shields suggest the following mnemonic for features worrisome for ocular melanoma:
 - “To Find Small Ocular Melanomas, Use Helpful Hints Daily”
- Virtually all lesions > 5mm thick are melanomas
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A

Symptomatic

- Choroid thickness >2mm
 What symptoms associated with a melanocytic lesion would make you worry the lesion is a melanoma?
 Metamorphopsia, photopsias, and/or visual field loss
- Lesion size
 The Drs. Shields suggest the following mnemonic for features worrisome for ocular melanoma:
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 - Presence of subretinal fluid
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Choroidal Nevus

Symptomatic

Fluid present

O

Thickness >2mm

The Drs. Shields suggest the following mnemonic for features worrisome for ocular melanoma:

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Symptomatic

Fluid present

Orange pigment

Thickness >2mm

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 - Presence of orange pigmentation
 - Absence of drusen
 - Presence of subretinal fluid
 - Location adjacent to ONH

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Symptomatic

Fluid present

Orange pigment

Thickness >2mm

M

The Drs. Shields suggest the following mnemonic for features worrisome for ocular melanoma:

**“To Find Small Ocular Melanomas,
Use Helpful Hints Daily”**

- Choroidal nevi are found in ~10% of the population
- The most important clinical factor is pathognomonic for melanoma: **Thickness >2mm**
- Lesion diameter and malignancy: A flat lesion less than **10 mm** in diameter is almost always benign
- Other features of a pigmented lesion that make you worry it's actually a melanoma:
 - Presence of **orange** pigmentation
 - Absence of **drusen**
 - Presence of **subretinal fluid**
 - Location adjacent to **ONH**

None!



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Choroidal Nevus

Symptomatic

Fluid present

Orange pigment

Thickness >2mm

Margin touching ONH

The Drs. Shields suggest the following mnemonic for features worrisome for ocular melanoma:

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Thickness >2mm

Margin touching ONH

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U

H

- Choroidal nevi are found in ~10% of the population

- The most important clinical factor is pathognomonic for melanoma: **Thickness >2mm**

- Lesion diameter and malignancy: A flat lesion less than 5mm in diameter is almost always benign

- Other features of a pigmented lesion that make you worry it's actually a melanoma:

- Presence of **orange** pigmentation
- Absence of **drusen**
- Presence of **subretinal fluid**
- Location adjacent to **ONH**

- Virtually all lesions > 5mm thick are melanomas

- Lesion diameter and malignancy: A flat lesion less than 5mm in diameter is almost always benign

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Symptomatic

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Orange pigment

Thickness >2mm

Margin touching ONH

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Ultrasonographic *H*ollowness

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- The clinical factor is pathognomonic for melanoma: **Thickness >2mm**
- Lesion diameter and malignancy: A flat lesion less than 5mm in diameter is almost always benign
- Other features of a pigmented lesion that make you worry it's actually a melanoma:
 - Presence of **orange** pigmentation
 - Absence of drusen
 - Presence of subretinal **fluid**
 - Location adjacent to **ONH**

None!



Q

Choroidal Nevus

Symptomatic

Fluid present

Orange pigment

Thickness >2mm

Margin touching ONH

The Drs. Shields suggest the following mnemonic for features worrisome for ocular melanoma:

**“To Find Small Ocular Melanomas,
Use Helpful Hints Daily”**

Ultrasonographic *H*ollowness

H

- Choroidal nevi are found in ~10% of the population
- The clinical factor is pathognomonic for melanoma: **Thickness >2mm**
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None!



A

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Ultrasonographic Hollowness

Halo absence

● Choroidal nevi are found in ~10% of the population

● The clinical factor is pathognomonic for melanoma: **None!**

- Lesion diameter and malignancy: A flat lesion less than 5mm in diameter is almost always benign
- Virtually all lesions > 5mm thick are melanomas

● Lesion diameter and malignancy: A flat lesion less than 5mm in diameter is almost always benign

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Use Helpful Hints Daily"

Ultrasonographic Hollowness

Halo absence

D

Choroidal nevi are found in ~10% of the population

clinical factor is pathognomonic for melanoma

Lesion diameter and malignancy: A flat lesion is almost always benign

Virtually all lesions > 5 mm thick are melanomas

Other features of a pigmented lesion that make you worry it's actually a melanoma:

- Presence of orange pigmentation
- Absence of drusen
- Presence of subretinal fluid
- Location adjacent to ONH

None!



A

Choroidal Nevus

Symptomatic

Fluid present

Orange pigment

Thickness >2mm

Margin touching ONH

The Drs. Shields suggest the following mnemonic for features worrisome for ocular melanoma:

**“To Find Small Ocular Melanomas,
Use Helpful Hints Daily”**

Ultrasonographic **H**ollowness

Drusen absence

Halo absence

- Choroidal nevi are found in ~10% of the population
- Lesion diameter and malignancy: A flat lesion that is larger than 5mm in diameter is almost always benign
- Other features of a pigmented lesion that make you worry it's actually a melanoma:
 - Presence of **orange** pigmentation
 - Absence of drusen
 - Presence of subretinal **fluid**
 - Location adjacent to **ONH**



Choroidal Nevus

Symptomatic

- Choroidal *Fluid present* found in ~ *Orange pigment* population
- Thickness >2mm* clinical factor is pathognomonic for *Margin touching ONH*

The Drs. Shields suggest the following mnemonic for features worrisome for ocular melanoma:

“To Find Small Ocular Melanomas, Use Helpful Hints Daily”

Ultrasonographic Hollowness

Halo absence

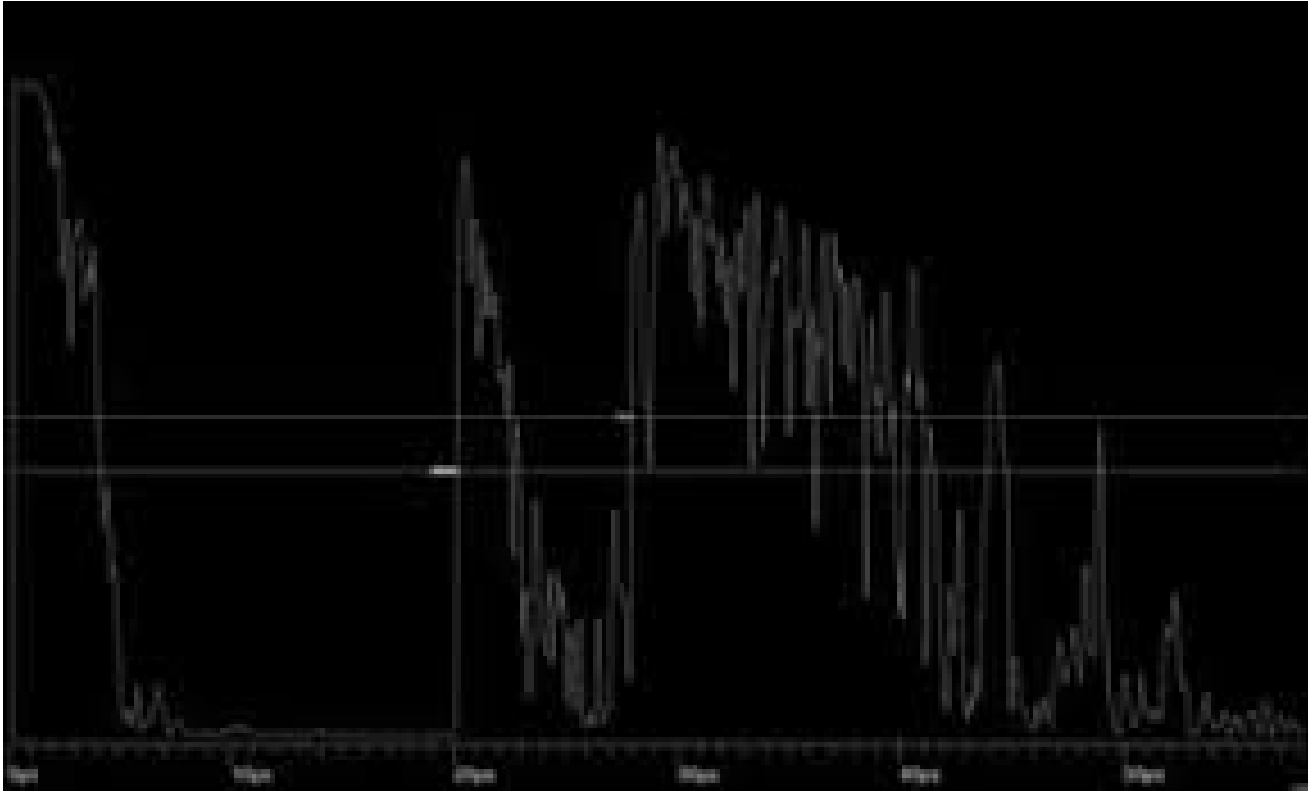
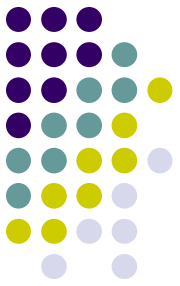
Drusen absence

None!

Let's take a look at the ultrasound signature of choroidal melanoma presentation

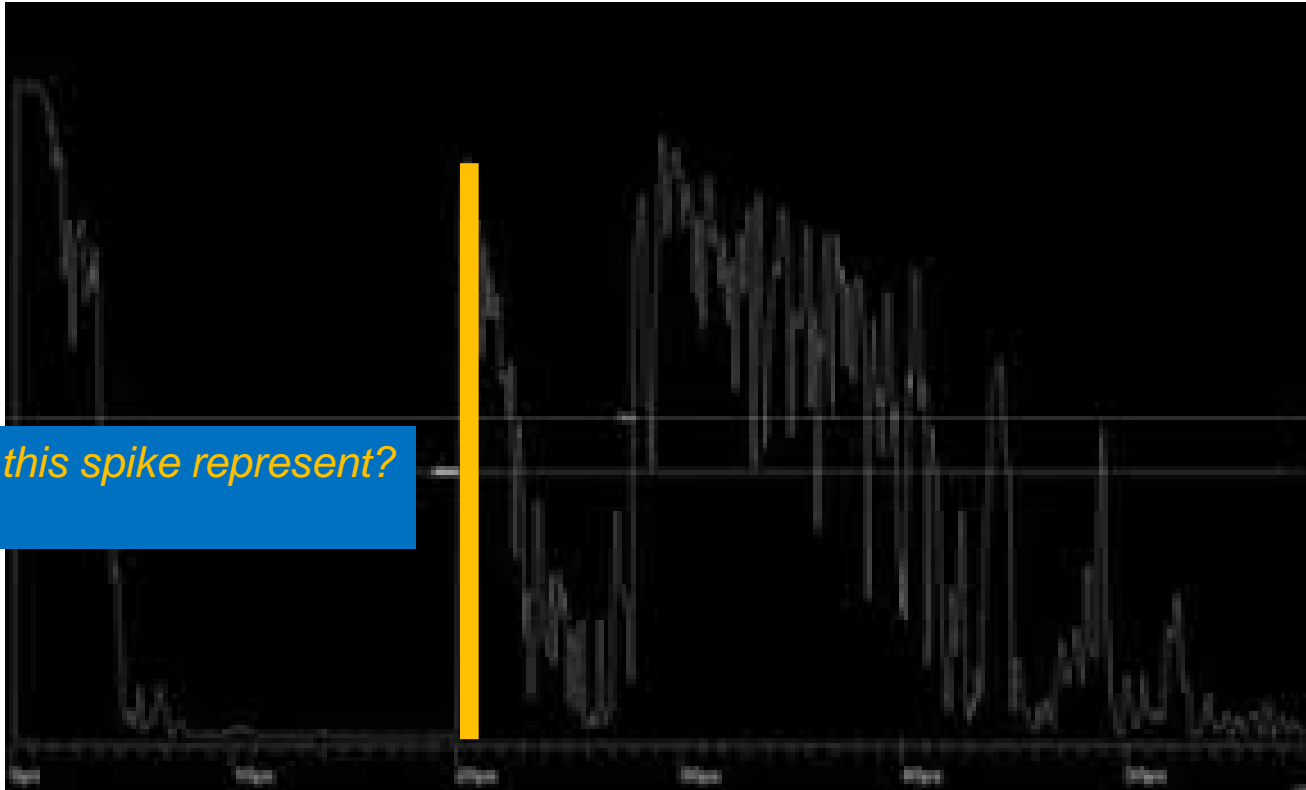
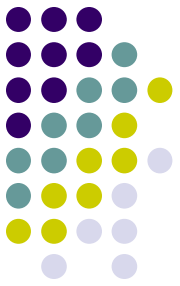
- Absence of drusen
- Presence of subretinal fluid
- Location adjacent to ONH

Choroidal Nevus



This is an *a*-scan of a choroidal melanoma.

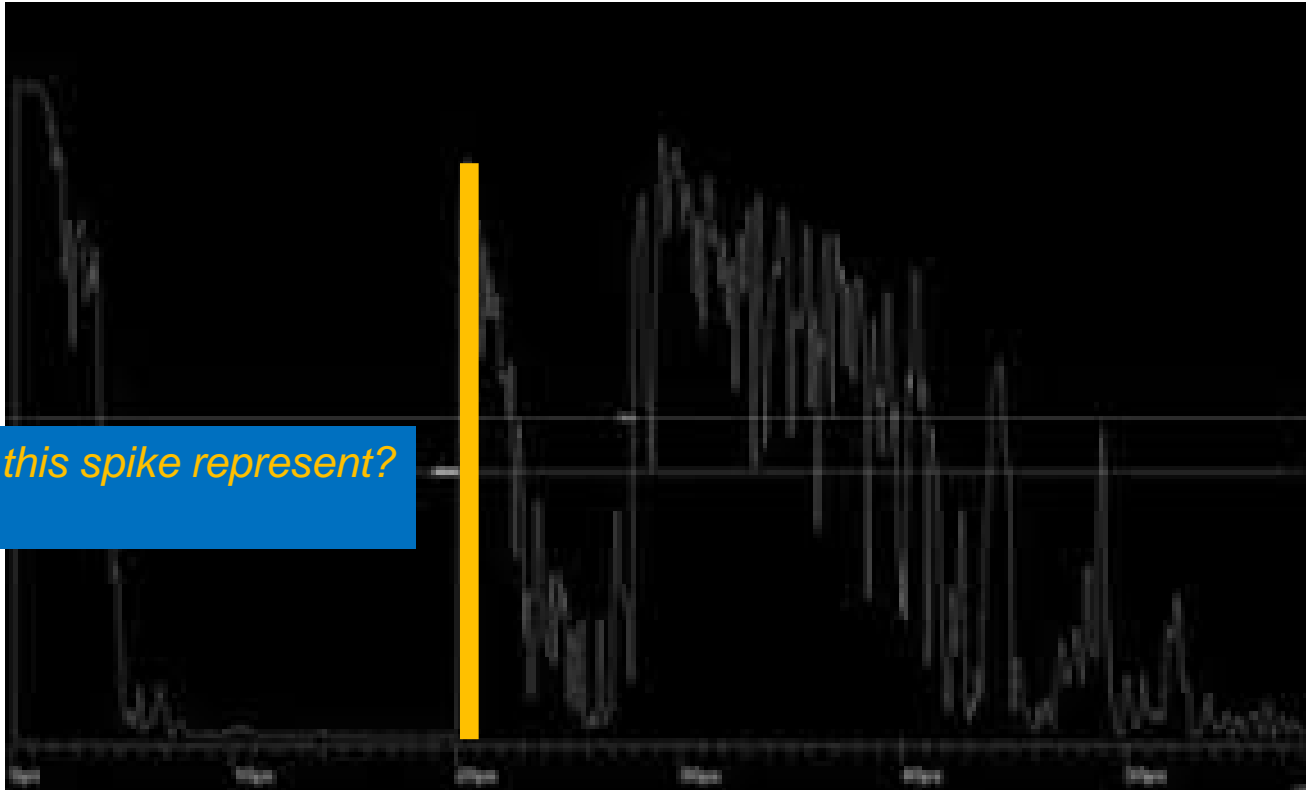
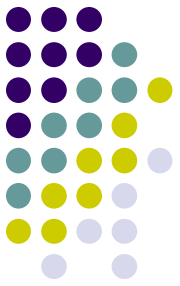
Choroidal Nevus



What does this spike represent?

This is an *a*-scan of a choroidal melanoma.

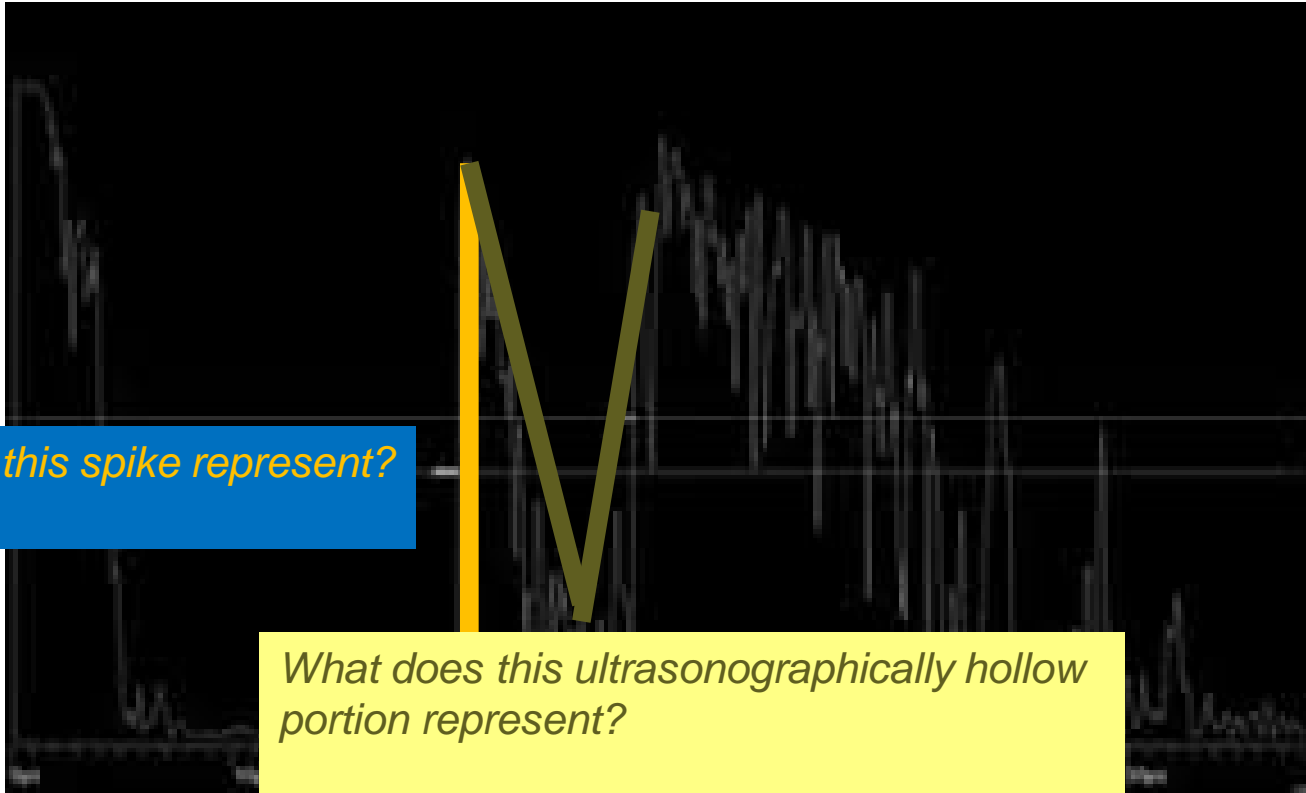
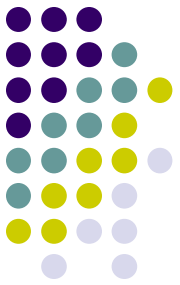
Choroidal Nevus



What does this spike represent?
The retina

This is an *a*-scan of a choroidal melanoma.

Choroidal Nevus

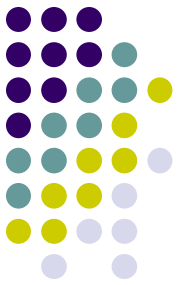


What does this spike represent?
The retina

What does this ultrasonographically hollow portion represent?

This is an a-scan of a choroidal melanoma.

Choroidal Nevus

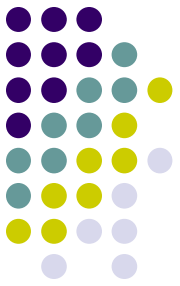


What does this spike represent?
The retina

What does this ultrasonographically hollow portion represent?
The tumor itself

This is an a-scan of a choroidal melanoma.

Choroidal Nevus



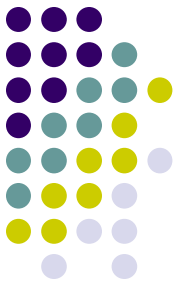
What does this little spike represent?

What does this spike represent?
The retina

What does this ultrasonographically hollow portion represent?
The tumor itself

This is an a-scan of a choroidal melanoma.

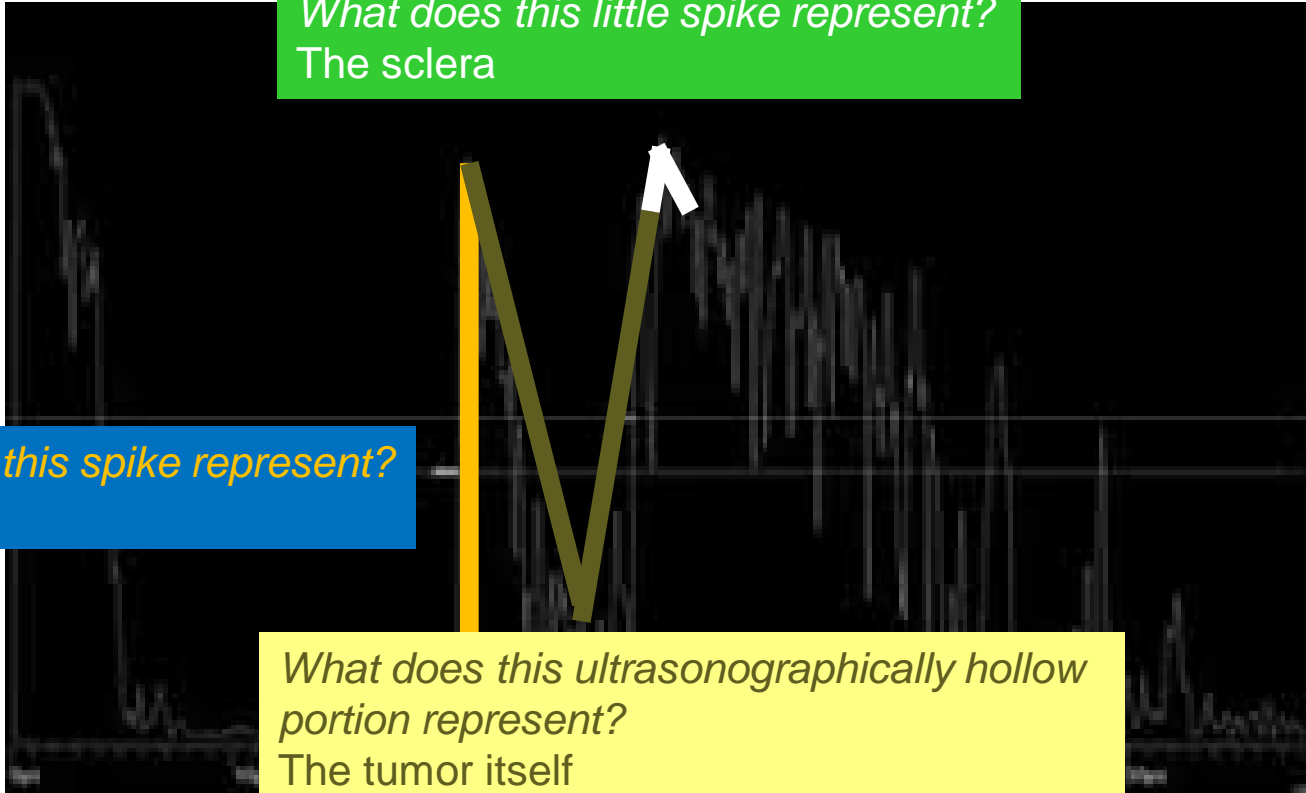
Choroidal Nevus



What does this little spike represent?
The sclera

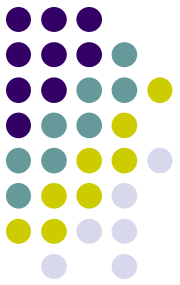
What does this spike represent?
The retina

What does this ultrasonographically hollow portion represent?
The tumor itself



This is an a-scan of a choroidal melanoma.

Choroidal Nevus



What does this little spike represent?
The sclera

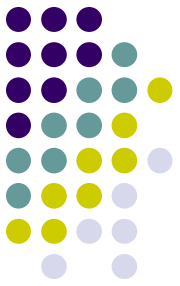
What does this portion represent?

What does this spike represent?
The retina

What does this ultrasonographically hollow portion represent?
The tumor itself

This is an a-scan of a choroidal melanoma.

Choroidal Nevus



What does this little spike represent?
The sclera

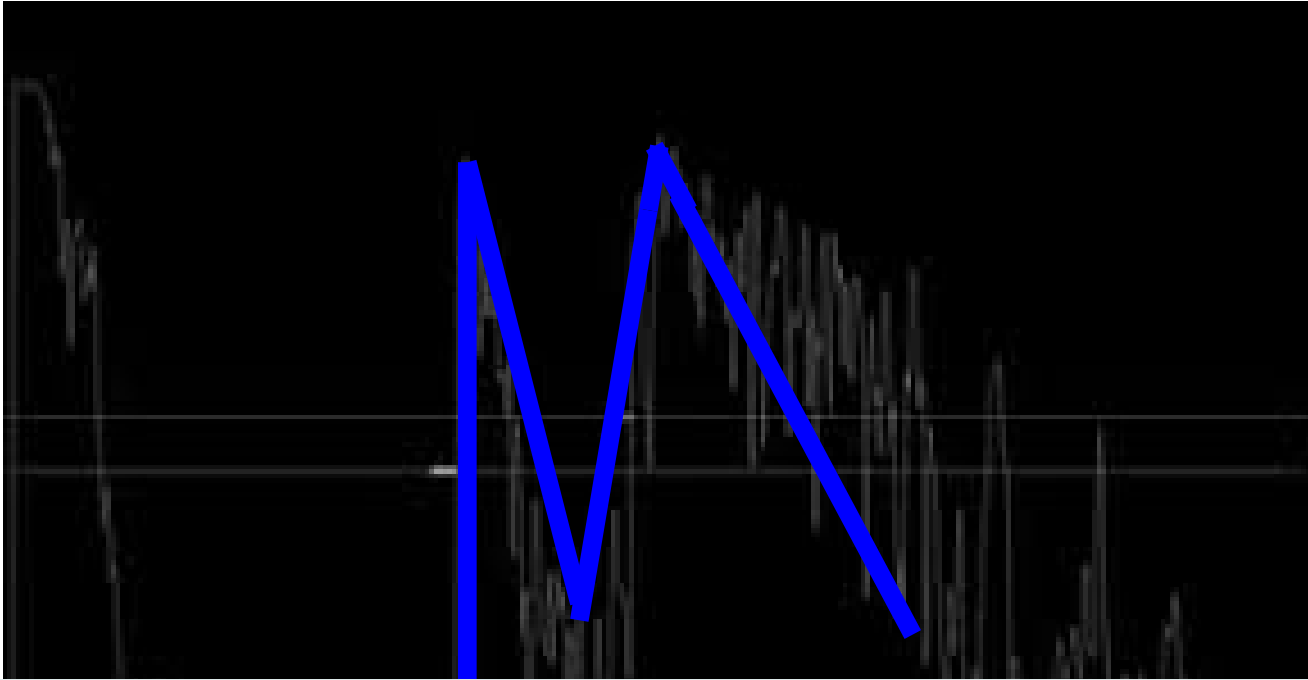
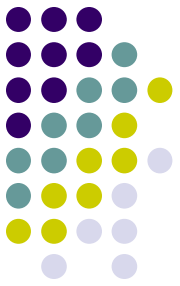
What does this portion represent?
The orbit

What does this spike represent?
The retina

What does this ultrasonographically hollow portion represent?
The tumor itself

This is an a-scan of a choroidal melanoma.

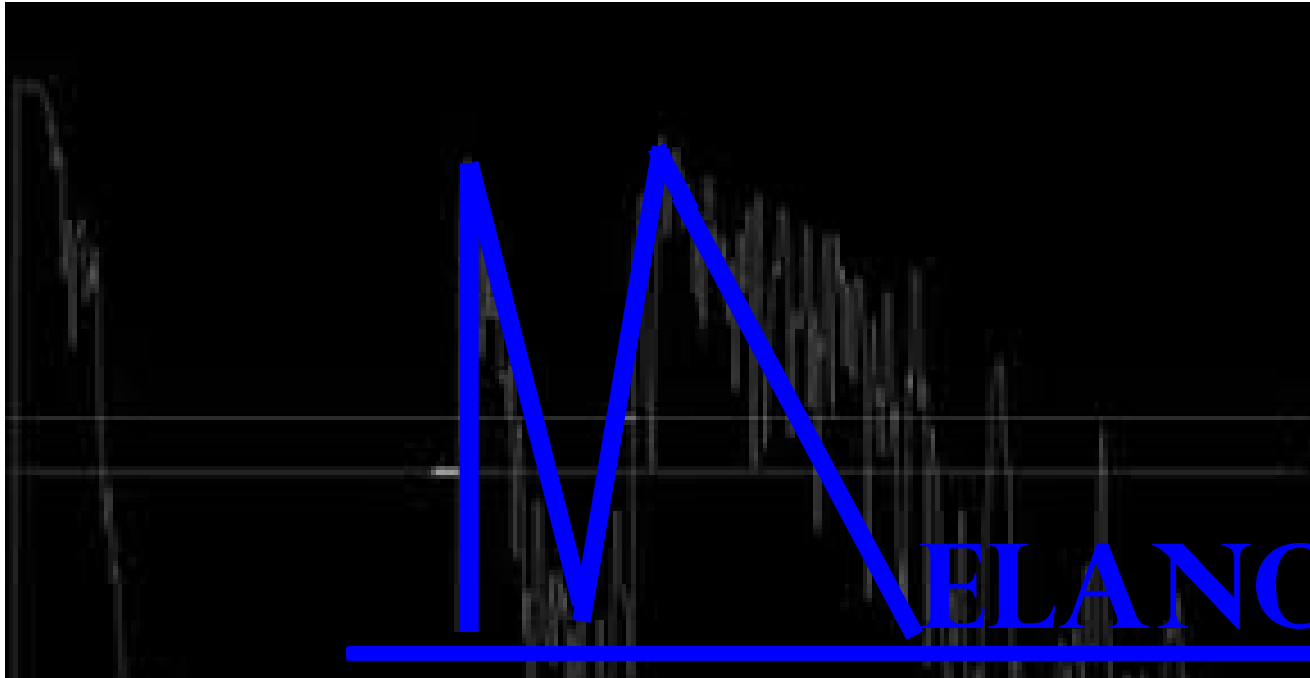
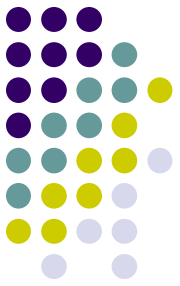
Choroidal Nevus



Put it all together and you have...

This is an a-scan of a choroidal melanoma.

Choroidal Nevus



MELANOMA!

Put it all together and you have...M for melanoma

This is an a-scan of a choroidal melanoma.



Q

Choroidal Nevus

- Choroidal nevi are found in ~ 10% of the population
- Which clinical factor is pathognomonic for whether a melanocytic lesion is benign or malignant? *None!*
- Lesion thickness and malignancy:
 - Virtually all lesions < 1 mm thick are benign nevi

Which of these is pathognomonic for choroidal melanoma?

- Location adjacent to ONH
- Other features of a pigmented lesion that make you worry it's actually a melanoma:
 - Presence of orange pigmentation
 - Absence of drusen
 - Presence of subretinal fluid
 - Location adjacent to ONH



A

Choroidal Nevus

- Choroidal nevi are found in ~ 10% of the population
- Which clinical factor is pathognomonic for whether a melanocytic lesion is benign or malignant? **None!**
- Lesion thickness and malignancy:
 - Virtually all lesions < 1 mm thick are benign nevi
- *Which of these is pathognomonic for choroidal melanoma?*
 - **None of them.** Remember, there is no pathognomonic clinical feature distinguishing choroidal nevi from choroidal melanoma!
- Other features of a pigmented lesion that make you worry it's actually a melanoma:
 - Presence of **orange** pigmentation
 - Absence of **drusen**
 - Presence of subretinal **fluid**
 - Location adjacent to **ONH**