Q

- **Post-op Endophthalmitis after CE**

(Cataract extraction)

  - *Acute* = Within [time frame]

  - *Chronic* = More than [time frame]

A

- **Post-op Endophthalmitis after CE**
  - *Acute* = Within 6 weeks of surgery
  - *Chronic* = More than 6 weeks after surgery

Aciute post-CE endophthalmitis

Q

- **Post-op Endophthalmitis after CE**
  - ***Acute* = Within 6 weeks of surgery**

Technically, endophthalmitis within 6 weeks post-op qualifies as 'acute.' However, what is the typical time-to-presentation?

A

- **Post-op Endophthalmitis after CE**
  - ***Acute* = Within 6 weeks of surgery**

Technically, endophthalmitis within 6 weeks post-op qualifies as 'acute.'
However, what is the typical time-to-presentation?
Usually within 24 – 72 hrs of surgery

Q

- **Post-op Endophthalmitis after CE**
  - ***Acute* = Within 6 weeks of surgery**

Technically, endophthalmitis within 6 weeks post-op qualifies as 'acute.'
However, what is the typical time-to-presentation?
Usually within 24 – 72 hrs of surgery

- *What should you consider if presentation is greater than about 1 week?*

A

- **Post-op Endophthalmitis after CE**
  - ***Acute* = Within 6 weeks of surgery**

Technically, endophthalmitis within 6 weeks post-op qualifies as 'acute.' However, what is the typical time-to-presentation?
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What should you consider if presentation is greater than about 1 week?
A less virulent bacterial species, or a fungal pathogen, may be the agent

Q

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However, what is the typical time-to-presentation?
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What should you consider if endophthalmitis presents in less *than 24 hrs?*

A

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Technically, endophthalmitis within 6 weeks post-op qualifies as 'acute.' However, what is the typical time-to-presentation?
Usually within 24 – 72 hrs of surgery

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A less virulent bacterial species, or a fungal pathogen, may be the agent

What should you consider if endophthalmitis presents in less *than 24 hrs?*
It may be **noninfectious** endophthalmitis

Q

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What is the other name for noninfectious post-op endophthalmitis?

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What should you consider if endophthalmitis presents in less *than 24 hrs?*
It may be **noninfectious** endophthalmitis

What is the other name for noninfectious post-op endophthalmitis?
Toxic anterior segment syndrome (TASS; more on this later in the set)

Q

- **Post-op Endophthalmitis after CE**
  - *Acute* = Within 6 weeks of surgery
    - Bugs: , ,
  - *Chronic* = More than 6 weeks after surgery

A

- **Post-op Endophthalmitis after CE**
  - *Acute* = Within 6 weeks of surgery
    - Bugs: Coag (-) *Staph*, *Staph aureus*, *Strep* sp
  - *Chronic* = More than 6 weeks after surgery

Q

- **Post-op Endophthalmitis after CE**
  - *Acute* = Within 6 weeks of surgery
    - Bugs: **Coag (-) *Staph*, *Staph aureus*, *Strep* sp**

What is the source of these bugs (where do they come from)?

A

- **Post-op Endophthalmitis after CE**
  - *Acute* = Within 6 weeks of surgery
    - Bugs: **Coag (-) *Staph*, *Staph aureus*, *Strep* sp**

What is the source of these bugs (where do they come from)?
The ocular surface, lids and lashes

Q

- **Post-op Endophthalmitis after CE**
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What is the source of these bugs (where do they come from)?
The ocular surface, lids and lashes

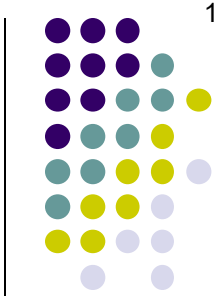
Which bug is the most common cause of acute post-CE endophthalmitis?

A

- **Post-op Endophthalmitis after CE**
  - *Acute* = Within 6 weeks of surgery
    - Bugs: **Coag (-) *Staph***, *Staph aureus*, *Strep sp*

What is the source of these bugs (where do they come from)?
The ocular surface, lids and lashes

Which bug is the most common cause of acute post-CE endophthalmitis?
Coag (-) Staph



Q

- **Post-op Endophthalmitis after CE**
  - *Acute* = Within 6 weeks of surgery
    - Bugs: **Coag (-) *Staph***, *Staph aureus*, *Strep sp*

What is the source of these bugs (where do they come from)?
The ocular surface, lids and lashes

Which bug is the *itis?*
Coag (-) Staph

What specific bug is this?

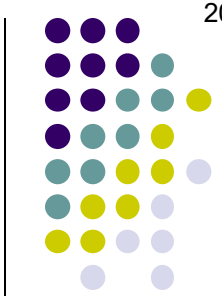
A

- **Post-op Endophthalmitis after CE**
  - *Acute* = Within 6 weeks of surgery
    - Bugs: **Coag (-) *Staph***, *Staph aureus*, *Strep sp*

What is the source of these bugs (where do they come from)?
The ocular surface, lids and lashes

Which bug is the **Coag (-) Staph** *itis?*

What specific bug is this?
S. epidermidis



Q

- **Post-op Endophthalmitis after CE**
  - *Acute* = Within 6 weeks of surgery
    - Bugs: **Coag (-) *Staph***, *Staph aureus*, *Strep sp*

What is the source of these bugs (where do they come from)?
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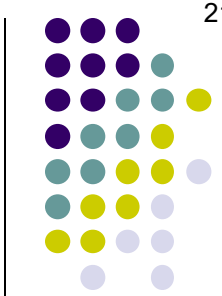
Which bug is the **Coag (-) Staph** *itis?*

What specific bug is this?
S. epidermidis

What percent of acute post-CE infectious endophthalmitis does it account for?



A

- **Post-op Endophthalmitis after CE**
  - *Acute* = Within 6 weeks of surgery
    - Bugs: **Coag (-) *Staph***, *Staph aureus*, *Strep sp*

What is the source of these bugs (where do they come from)?
The ocular surface, lids and lashes

Which bug is the **Coag (-) Staph** *itis?*

What specific bug is this?
S. epidermidis

What percent of acute post-CE infectious endophthalmitis does it account for?
About 70

Q

- **Post-op Endophthalmitis after CE**
  - *Acute* = Within 6 weeks of surgery
    - Bugs: **Coag (-) *Staph*, *Staph aureus*, *Strep* sp**
  - *Chronic* = More than 6 weeks after surgery

Generally speaking, what would be the typical timeframe for onset of endophthalmitis owing to each of these bugs?

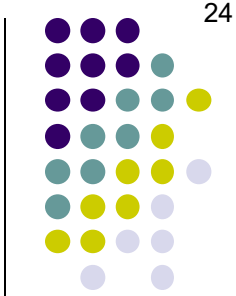
A

- **Post-op Endophthalmitis after CE**
  - *Acute* = Within 6 weeks of surgery
    - Bugs: **Coag (-) *Staph***, ***Staph aureus***, ***Strep* sp**
  - *Chron* we

The less virulent *S. epi* will take **5-7 days** to declare

The more virulent *S. aureus* and *Strep* sp. will declare within **4 days**

Generally speaking, what would be the typical timeframe for onset of endophthalmitis owing to each of these bugs?



Q

- **Post-op Endophthalmitis after CE**
  - *Acute* = Within 6 weeks of surgery
    - Bugs: Coag (-) *Staph*, *Staph aureus*, *Strep* sp
    - Management: Per study (abb.)
  - *Chronic* = More than 6 weeks after surgery

A

- **Post-op Endophthalmitis after CE**
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    - Bugs: Coag (-) *Staph*, *Staph aureus*, *Strep* sp
    - Management: Per EVS
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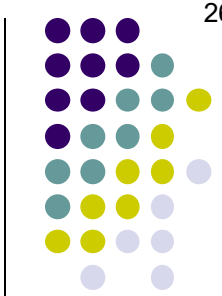

Q

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What does EVS *stand for?*

A

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What does EVS stand for?
Endophthalmitis Vitrectomy Study

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What does EVS *stand for?*
Endophthalmitis Vitrectomy Study

What questions did the EVS seek to answer?
With respect to the management of acute post-CE infectious endophthalmitis:
1) What is the role of… *[surgical procedure]*
2)

A

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Endophthalmitis Vitrectomy Study

What questions did the EVS seek to answer?
With respect to the management of acute post-CE infectious endophthalmitis:
1) What is the role of…PPV?
2) *(pars plana vitrectomy)*

Q

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What questions did the EVS seek to answer?
With respect to the management of acute post-CE infectious endophthalmitis:
1) What is the role of…PPV?
2) How effective are…

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What questions did the EVS seek to answer?
With respect to the management of acute post-CE infectious endophthalmitis:
1) What is the role of…PPV?
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Q

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In evaluating PPV, what was it compared to?

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What did the study show with respect to PPV efficacy? Did it improve visual outcomes?

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In evaluating PPV, what was it compared to?
Intravitreal antibiotics

What did the study show with respect to PPV efficacy? Did it improve visual outcomes?
Depends—if VA was LP or worse at presentation, visual outcome was better with PPV. However, if VA was better than LP, there was no difference between the PPV and intravitreal-antibiotics-only groups with respect to final visual outcome.

A

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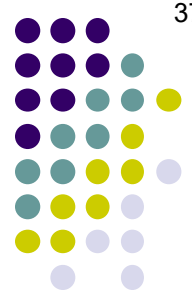

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What did the study show with respect to systemic antibiotics and visual outcome?

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What did the study show with respect to systemic antibiotics and visual outcome?
Intravenous antibiotics did **not** improve final visual outcome

Q

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What did the study show with respect to systemic antibiotics and visual outcome?
Intravenous antibiotics did not improve final visual outcome

Why was this conclusion controversial?

Q/A

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What did the study show with respect to systemic antibiotics and visual outcome?
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Why was this conclusion controversial?
The antibiotics used in the EVS were _____ and _____ .

A

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What did the study show with respect to systemic antibiotics and visual outcome?
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Why was this conclusion controversial?
The antibiotics used in the EVS were **ceftazidime** and **amikacin** .

Q

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The antibiotics used in the EVS were **ceftazidime** and **amikacin** . The EVS was criticized for the choice of Ceftaz over [redacted], which has better coverage of Gram+ cocci.

A

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The antibiotics used in the EVS were **ceftazidime** and **amikacin** . The EVS was criticized for the choice of Ceftaz over **vancomycin** , which has better coverage of Gram+ cocci.
Because of this, the effectiveness of IV abx remains an open question for many clinicians.

Q

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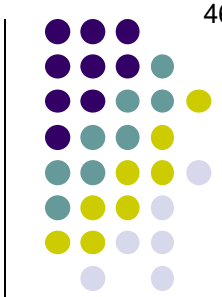
  - *Acute* = Within 6 weeks of surgery
    - Bugs: Coag (-) *Staph*, *Staph aureus*, *Strep* sp
    - **Management: Per EVS**
  - *Chronic* = More than 6 weeks after surgery

*A patient s/p CE **6 months prior** presents with endophthalmitis. Should EVS findings dictate management?*



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*A patient s/p CE **6 months prior** presents with endophthalmitis. Should EVS findings dictate management?*
Not necessarily. The EVS addressed endophthalmitis developing within 6 weeks of CE, so extrapolation to this situation would constitute 'off label use.'

Q

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*A patient s/p **trab** 3 weeks prior presents with endophthalmitis. Should EVS findings dictate management?*

A

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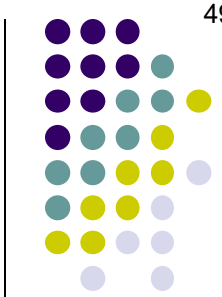
Not necessarily. The EVS addressed endophthalmitis developing within 6 weeks of CE, so extrapolation to this situation would constitute 'off label use.'

*A patient s/p **trab** 3 weeks prior presents with endophthalmitis. Should EVS findings dictate management?*
Again, not necessarily. The EVS addressed endophthalmitis after CE. As in the previous scenario, to extrapolate to this situation may not be justified or appropriate.



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    - Bugs: Coag (-) *Staph*, *Staph aureus*, *Strep* sp
    - Management: Per EVS
  - *Chronic* = More than 6 weeks after surgery
    - Presents w/ indolent course or progressive inflammation

(No question—proceed when ready)

Q

- **Post-op Endophthalmitis after CE**
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    - Management: Per EVS
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    - Presents w/ indolent course or progressive inflammation
    - Bugs: [ ], [ ], [ ]

A

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    - Bugs: *P acnes*, coag (-) *Staph* , fungus

Q

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Which one of these is the #1 cause of chronic endophthalmitis after cataract surgery?

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By definition, chronic endophthalmitis commences 6+ weeks after surgery. In terms of P acnes… *What is the average amount of time between surgery and presentation?*

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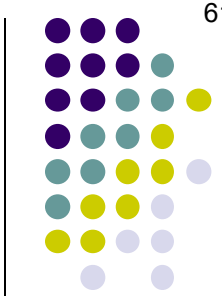

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What is the range? Two weeks to **several years**

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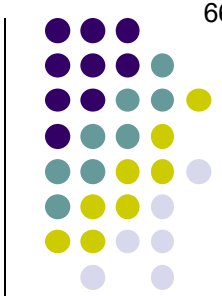
Granulomatous

What is the classic response to a trial of steroids?
The inflammation will lessen, then recur (or even worsen) when the steroids are stopped



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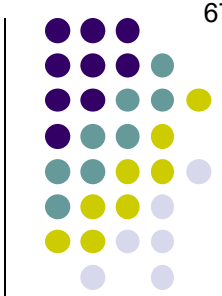

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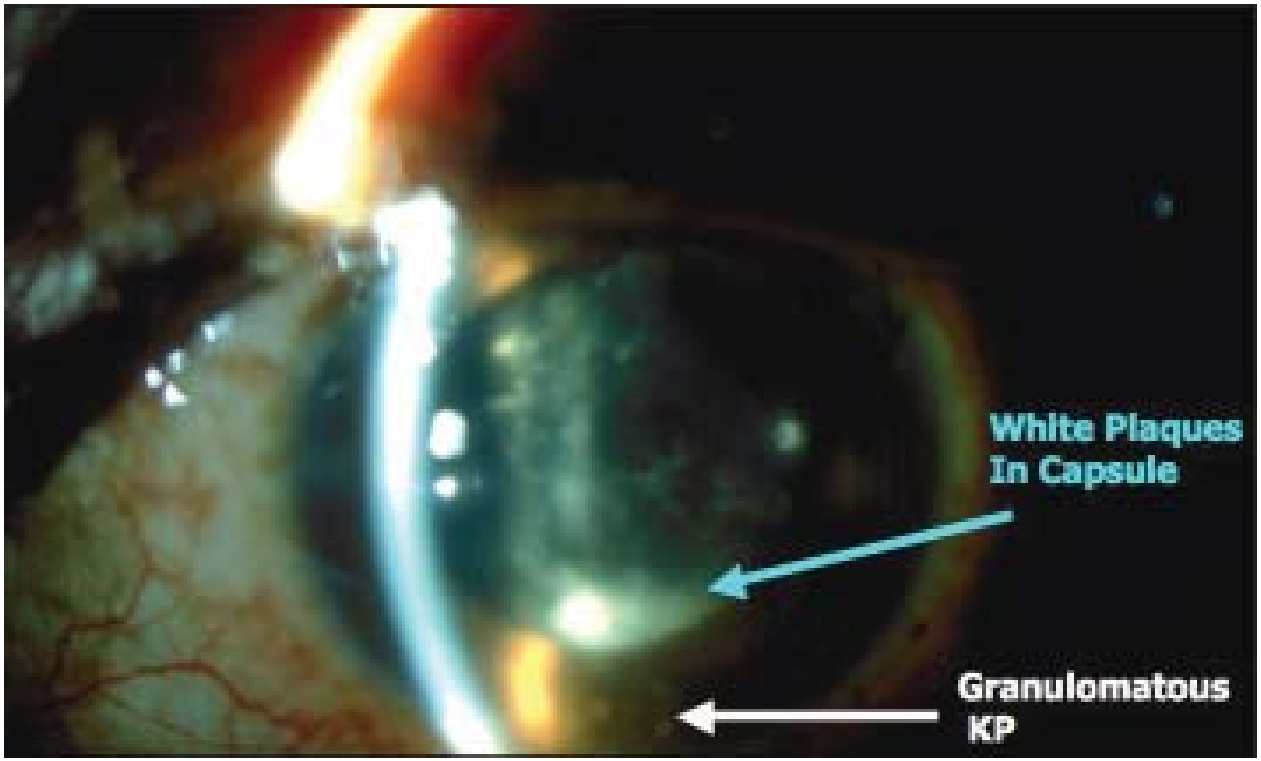

P acnes post-CE endophthalmitis

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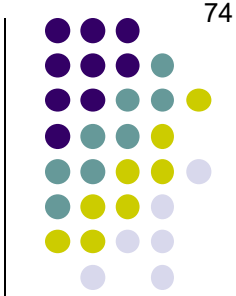
Seeding of the vitreous with the organism, which would cause the vitritis to worsen



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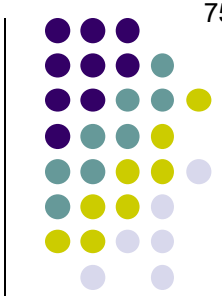

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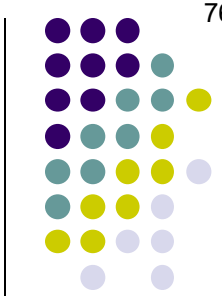

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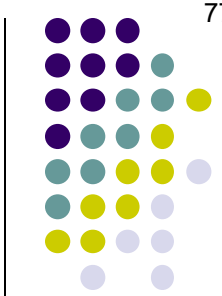

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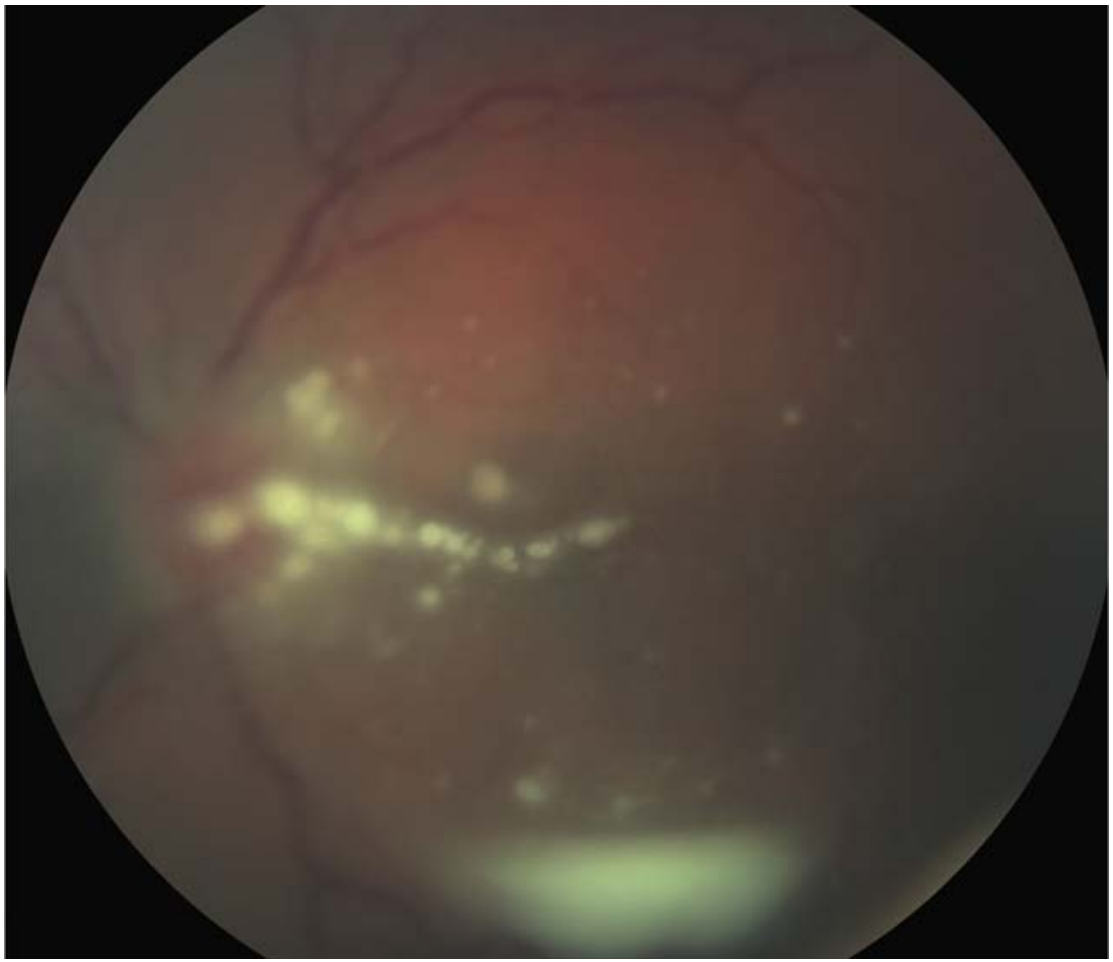

Fungal endophthalmitis: ‘String of pearls’ in the vitreous

Q

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How is chronic fungal post-CE endophthalmitis treated?

follows

n

A

- Post-op Endophthalmitis after CE
  - *Which fungi are most commonly implicated in chronic post-CE endophthalmitis?*
    Candida, *Aspergillus*, and several others you (and I) have never heard of

    How does fungal post-CE endophthalmitis present?
    In a manner very similar to that of *P acnes* post-CE endophthalmitis, unfortunately
  - *Are there any clinical findings that are more suggestive of a fungal etiology?*
    Yes. One is found in the anterior segment; the other in the vitreous cavity:
    --Anterior segment: The presence of corneal infiltrates, iris mass, and/or scleritis
    --Vitreous: The presence of snowballs, especially in a 'string of pearls' configuration

mation

- Bugs: *P acnes*, coag (-) *Staph* , **fungus**
  - Peripheral white plaque in bag = *P acnes*

How is chronic fungal post-CE endophthalmitis treated?
With intravitreal antifungals (usually amphotericin and/or voriconazole). Vitrectomy may be necessary as well.

follows

n

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What about systemic antifungals?

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  With intravitreal antifungals (usually amphotericin and/or voriconazole). Vitrectomy may be necessary as well.

  What about systemic antifungals?
  At this time, it is not clear what role (if any) systemic antifungals can/should play in managing post-op fungal endophthalmitis

follows

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If the identity of the organism is in question, how should the clinician proceed?

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By obtaining aqueous (and vitreous, if PPV is performed) samples for culture and stains

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Which three culture media should be employed?
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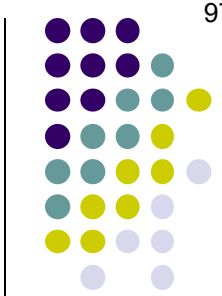
Which three culture media should be employed?
--Aerobic
--Anaerobic
--Fungal



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Which two stains should be used?
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Which two stains should be used?
--Gram
--Giemsa

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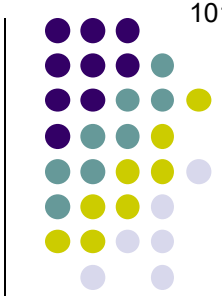
By obtaining aqueous (and vitreous, if PPV is performed) samples for culture and stains

Which is of greater utility--cultures, or stains?
Stains, definitely. Remember, these pathogens are slow-growing and fastidious; thus, it could be weeks before they reveal themselves via culturing. On the other hand, staining has the potential to identify the culprit **instantly**.



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      - PPV and capsulectomy - in which case, use Vancomycin
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It is important to bear in mind that certain noninfectious conditions can present in a manner very much like chronic post-op infectious endophthalmitis. What are some of these conditions?

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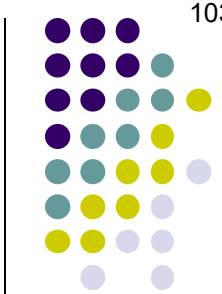
--Retained lens fragments
--IOL-related issues (eg, a square-edged haptic malpositioned in the ciliary sulcus; UGH syndrome)
--Intraocular lymphoma (ie, masquerade syndrome)



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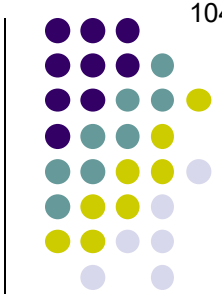

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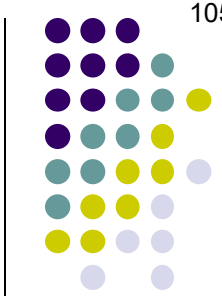

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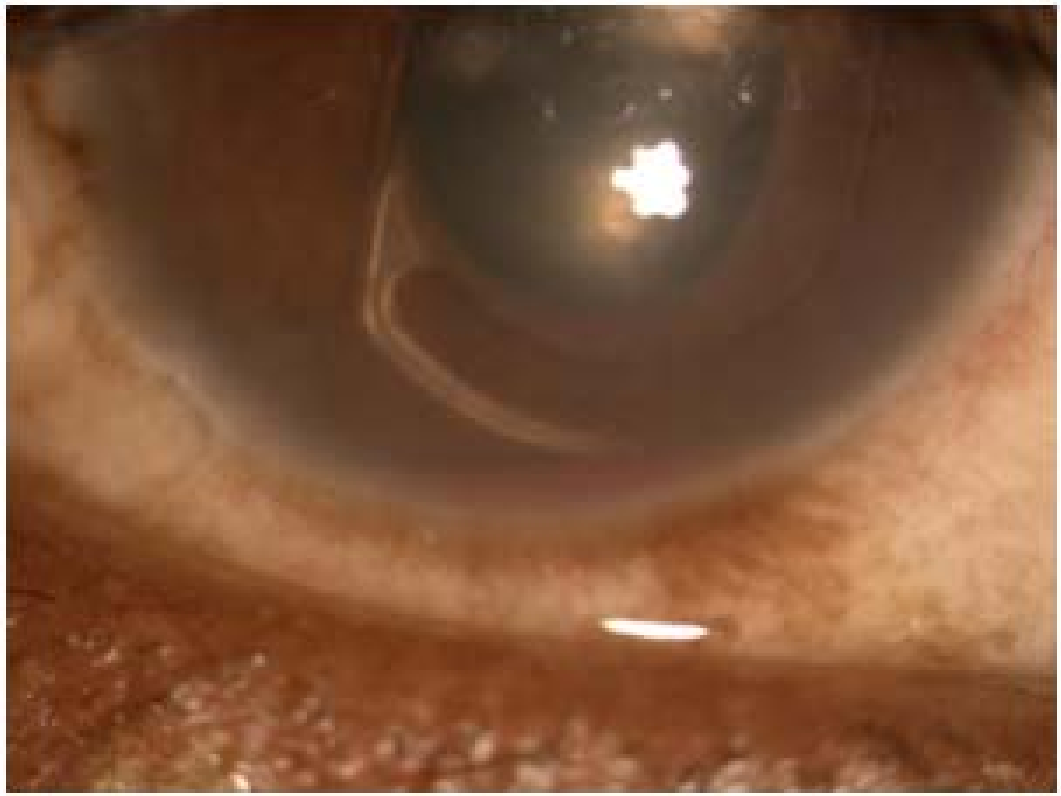
What is UGH syndrome?
A constellation of sequelae that can occur when an inappropriately-sized AC IOL chafes the iris and other anterior-segment structures. Advances in IOL manufacturing have made it an uncommon occurrence.



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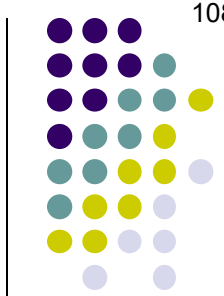

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    ammation
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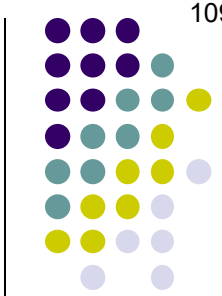
    - If recurs: IOL removal or exchange



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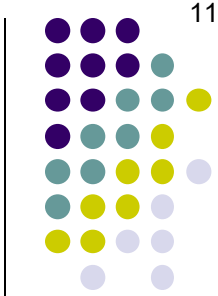

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    Which factor presents the largest increase in relative risk of post-op endophthalmitis?

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    Wound leak on POD1--one study pegged its increased relative risk at **44**

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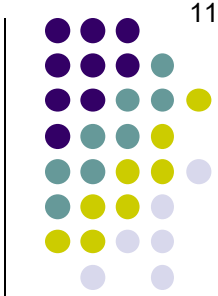

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    What is the Infectious Dose 50 (ID_{50}) for Staph epi *if the capsule is intact?*
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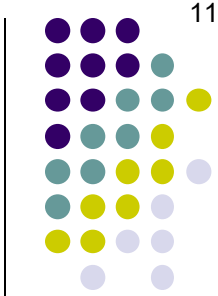

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    About one million organisms

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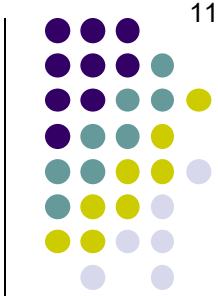

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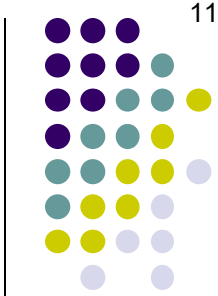

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    What is the ID_{50} if the capsule is ruptured (ie, if the Staph epi *gets into the vitreous)?*
    10. That's not a typo--only ten *Staph epis* need get in the vitreous to produce post-op endophthalmitis!

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- ***Noninfectious*** **endophthalmitis after CE**

Q

- ***Noninfectious* endophthalmitis after CE**
  - Noninfectious endophthalmitis is also known as four words (abb.)

A

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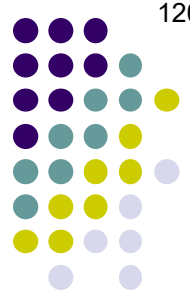

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  - Time to presentation: 12-24 hours after surgery

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  - Time to presentation: 12-24 hours after surgery
  - Key difference in presentation from infectious endophthalmitis: Markedly worse sign (two words)

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TASS: Limbus-to-limbus corneal edema

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  - Pathogenesis: Immune reaction to compromised surgical materials; e.g.:
    - Denatured
    -
    -
    -

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    - [redacted] in intracameral solutions
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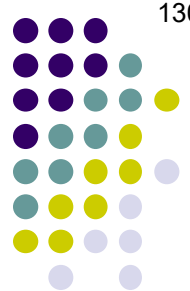

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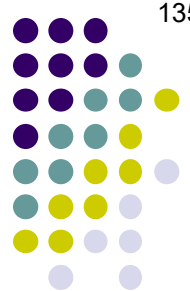

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Infectious vs Noninfectious Post-op Endophthamitis: Compare and Contrast

Signs and Symptoms	TASS	Acute Bacterial Endophthalmitis
Onset latency	*?*	*?*

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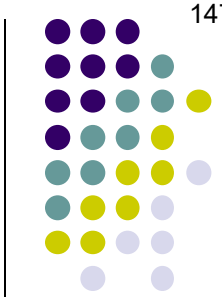
Q

With regards to cataract extraction (CE) surgery…

- Do intracameral antibiotics reduce the risk of endophthalmitis?



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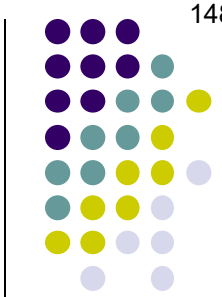

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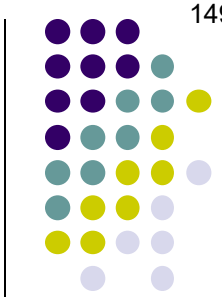

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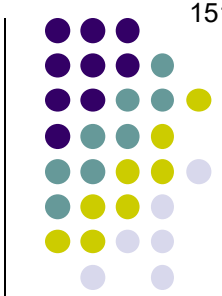

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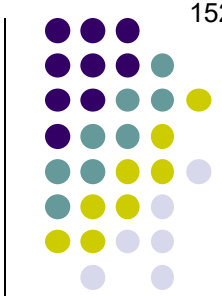

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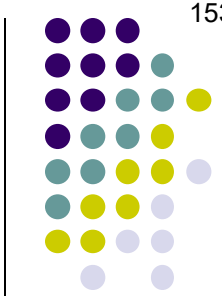
  - YES if [medical condition] (use PO [abx])



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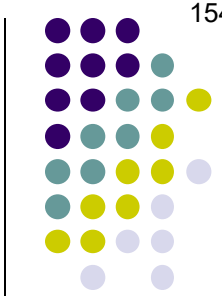

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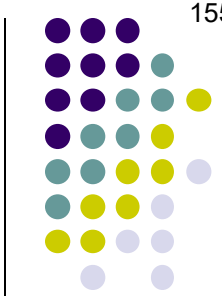
  - NO for medical condition or medical condition (not necessary because CE does not produce a)



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(MVP = Mitral valve prolapse)

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The efficacy of intracameral antibiotics for endophthalmitis prophylaxis in CE surgery is a complex and contentious issue at this time. A recent enormous multicenter prospective study in Europe found that infiltrating cefuroxime into the AC at the end of CE surgery resulted in a five-fold decrease in post-op endopthalmitis rates compared to placebo infiltration.

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Like I said: A complex and contentious issue…