Post-op Endophthalmitis after CE

- **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
Post-op Endophthalmitis after CE

- **Acute** = Within 6 weeks of surgery
- **Chronic** = More than 6 weeks after surgery

*Is post-op CE endophthalmitis more likely to occur in right eyes, or left?*
A

Post-op Endophthalmitis after CE

- **Acute** = Within 6 weeks of surgery
- **Chronic** = More than 6 weeks after surgery

Is post-op CE endophthalmitis more likely to occur in right eyes, or left? Right
Q

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

*Is post-op CE endophthalmitis more likely to occur in right eyes, or left? Right*

*What proportion of post-CE endophthalmitis cases occur in right eyes?*
Post-op Endophthalmitis after CE

- **Acute** = Within **6 weeks** of surgery

- **Chronic** = More than **6 weeks** after surgery

---

*Is post-op CE endophthalmitis more likely to occur in right eyes, or left?*

Right

*What proportion of post-CE endophthalmitis cases occur in right eyes?*

Estimates run as high as 86%!
Q

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

Is post-op CE endophthalmitis more likely to occur in right eyes, or left?
Right

What proportion of post-CE endophthalmitis cases occur in right eyes?
Estimates run as high as 86%!

Why should it be more common in right eyes?
Post-op Endophthalmitis after CE

- **Acute** = Within 6 weeks of surgery
- **Chronic** = More than 6 weeks after surgery

Is post-op CE endophthalmitis more likely to occur in right eyes, or left? Right

What proportion of post-CE endophthalmitis cases occur in right eyes? Estimates run as high as 86%!

Why should it be more common in right eyes? It’s probably because most surgeons are right-handed, and therefore they place the main surgical wound OD at the inferior aspect of the cornea. Thus, this wound is in contact with the tear lake, meaning pathogens swimming therein have ready access to it. This increases the likelihood of pathogens entering the eye.
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?
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*
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?*
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 less virulent bacterial species, or a fungal pathogen, may be the agent
**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 less virulent bacterial species, or a fungal pathogen, may be the agent

- What should you consider if endophthalmitis presents in less than 24 hrs?
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

  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

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

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

- 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

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

- Management:
  - Intravitreal antibiotics are usually not helpful, unless it follows PPV and subtotal capsulectomy
  - Use vancomycin 1mg, either in the vitreous or in the bag
  - If recurs: Total capsulectomy with IOL removal or exchange
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)?
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
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?*
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
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 infectious endophthalmitis?
**Coag (-) Staph**

What specific bug is this?

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

**What specific bug is this?**
*S. epidermidis*

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

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**
    - 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**

- **Chronic** = More than 6 weeks after surgery
  - Presents with indolent course or progressive inflammation

**Generally speaking, what would be the typical timeframe for onset of endophthalmitis owing to each of these bugs?**
Post-op Endophthalmitis after CE

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

- **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*
    - Management: Per EVS
  - *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*
    ● Management: Per **EVS**

*What does EVS stand for?*
Post-op Endophthalmitis after CE

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

What does EVS stand for?
Endophthalmitis Vitrectomy Study
Post-op Endophthalmitis after CE

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

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)
Post-op Endophthalmitis after CE

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

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...PPV?  
2) (pars plana vitrectomy)
Post-op Endophthalmitis after CE

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

*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…PPV?
2) How effective are…
Post-op Endophthalmitis after CE

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

**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…PPV?
2) How effective are…systemic antibiotics?
Q

Post-op Endophthalmitis after CE

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

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…PPV?
2) How effective are…systemic antibiotics?

In evaluating PPV, what was it compared to?
Post-op Endophthalmitis after CE

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

**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...PPV?
2) How effective are...systemic antibiotics?

**In evaluating PPV, what was it compared to?**
Intravitreal antibiotics
● Post-op Endophthalmitis after CE
  ● Acute = Within 6 weeks of surgery
    ● Bugs: Coag (-) Staph, Staph aureus, Strep sp
    ● Management: Per EVS

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...PPV? 
2) How effective are...systemic antibiotics?

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?
Post-op Endophthalmitis after CE

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

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...PPV?**
2) How effective are...systemic antibiotics?

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.
Post-op Endophthalmitis after CE

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

**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...PPV?**
2) How effective are...systemic antibiotics?

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

IV antibiotics did not improve final visual outcome.

Post-op Endophthalmitis after CE

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

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...PPV?
2) How effective are...systemic antibiotics?

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

What did the study show with respect to systemic antibiotics and visual outcome?
Post-op Endophthalmitis after CE

- **Acute** = Within 6 weeks of surgery
  - Bugs: Coag (-) *Staph, Staph aureus, Strep sp*
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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...PPV?
2) How effective are...systemic antibiotics?

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

**What did the study show with respect to systemic antibiotics and visual outcome?**
Intravenous antibiotics did **not** improve final visual outcome
Post-op Endophthalmitis after CE

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

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...PPV?
2) How effective are...systemic antibiotics?

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

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

● Post-op Endophthalmitis after CE
  ● Acute = Within 6 weeks of surgery
    ○ Bugs: Coag (-) Staph, Staph aureus, Strep sp
    ○ Management: Per EVS

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...PPV?
2) How effective are...systemic antibiotics?

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

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?
The antibiotics used in the EVS were ceftazidime and amikacin.

Post-op Endophthalmitis after CE

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

**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...PPV?
2) How effective are...systemic antibiotics?

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

**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?**
The antibiotics used in the EVS were *ceftazidime* and *amikacin*.
Post-op Endophthalmitis after CE

**Acute** = Within 6 weeks of surgery

- Bugs: Coag (-) Staph, Staph aureus, Strep sp
- Management: Per EVS

*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...PPV?
2) How effective are...systemic antibiotics?

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

*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?*
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.
Post-op Endophthalmitis after CE

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

**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...PPV?
2) How effective are...systemic antibiotics?

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

**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?**
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.
Post-op Endophthalmitis after CE

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

**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...PPV?
2) How effective are...systemic antibiotics?

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

**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?**
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

Post-op Endophthalmitis after CE

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

- **Chronic** = More than 6 weeks after surgery
  - Peripheral white plaque in bag = P. acnes
  - Management: Intravitreal antibiotics are usually not helpful, unless it follows PPV and subtotal capsulectomy
    - Use vancomycin 1mg, either in the vitreous or in the bag
    - If recurs: Total capsulectomy with IOL removal or exchange

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

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

- **Chronic** = More than 6 weeks after surgery
  - Presents with indolent course or progressive inflammation
  - Bugs: *P. acnes, coag (-) Staph, fungus*
  - Peripheral white plaque in bag = *P. acnes*
  - Management:
    - Intravitreal antibiotics are usually not helpful, unless it follows PPV and subtotal capsulectomy
    - Use vancomycin 1mg, either in the vitreous or in the bag
    - If recurs: Total capsulectomy with IOL removal or exchange

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.’
**Post-op Endophthalmitis after CE**

- **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?

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?
A

Post-op Endophthalmitis after CE

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

- **Chronic** = More than 6 weeks after surgery
  - Peripheral white plaque in bag = *P. acnes*
  - Management:
    - Intravitreal antibiotics are usually not helpful, unless it follows PPV and subtotal capsulectomy
    - Use vancomycin 1mg, either in the vitreous or in the bag
    - If recurs: Total capsulectomy with IOL removal or exchange

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.’

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.
**Post-op Endophthalmitis after CE**

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

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

- **Chronic** = More than 6 weeks after surgery
  - Presents w/ indolent course or progressive inflammation
  - Bugs: *P acnes*, *coag (-) Staph*, fungus
Post-op Endophthalmitis after CE

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

**Chronic** = More than 6 weeks after surgery
- Presents w/ indolent course or progressive inflammation
- Bugs: *P. acnes*, coag (-) Staph, fungus

Which one of these is the #1 cause of chronic endophthalmitis after cataract surgery?
Post-op Endophthalmitis after CE

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

- **Chronic** = More than 6 weeks after surgery
  - Presents w/ indolent course or progressive inflammation
  - Bugs: *P acnes*, coag (-) Staph, fungus

*Which one of these is the #1 cause of chronic endophthalmitis after cataract surgery? P acnes*
**Post-op Endophthalmitis after CE**

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

- **Chronic** = More than 6 weeks after surgery
  - Presents w/ indolent course or progressive inflammation
  - Bugs: *P acnes, coag (-) Staph, fungus*

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

*P acnes*

**Microbiologically speaking, how is the bacterium P acnes classified?**
Post-op Endophthalmitis after CE

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

- **Chronic** = More than 6 weeks after surgery
  - Presents w/ indolent course or progressive inflammation
  - Bugs: P acnes, coag (-) Staph, fungus

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

Microbiologically speaking, how is the bacterium P acnes classified?
It is an anaerobic, Gram(+), pleomorphic rod
Q

- Post-op Endophthalmitis after CE
  - Acute = Within 6 weeks of surgery
    - Bugs: Coag (-) Staph, Staph aureus, Strep sp
    - Management: Per EVS
  - Chronic = More than 6 weeks after surgery
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    - Bugs: \textit{P acnes}, coag (-) Staph, fungus

Which one of these is the #1 cause of chronic endophthalmitis after cataract surgery? \textit{P acnes}

Microbiologically speaking, how is the bacterium \textit{P acnes} classified?
It is an anaerobic, Gram(+), pleomorphic rod

Is it part of the normal ocular/periocular microbial flora?
Post-op Endophthalmitis after CE

- **Acute** = Within 6 weeks of surgery
  - Bugs: Coag (-) Staph, Staph aureus, Strep sp
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Which one of these is the #1 cause of chronic endophthalmitis after cataract surgery?  
*P. acnes*

Microbiologically speaking, how is the bacterium *P. acnes* classified?  
It is an anaerobic, Gram(+), pleomorphic rod

Is it part of the normal ocular/periocular microbial flora?  
Yes
Post-op Endophthalmitis after CE

- **Acute** = Within 6 weeks of surgery
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  - Bugs: *P acnes*, coag (-) Staph, fungus

*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?*
Post-op Endophthalmitis after CE

Acute = Within 6 weeks of 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? 3-4 months
Post-op Endophthalmitis after CE

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

- **Chronic** = More than 6 weeks after surgery
  - Presents w/ indolent course or progressive inflammation
  - Bugs: *P. acnes*, coag (-) Staph, fungus

*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? **3-4 months** What is the range?*
Post-op Endophthalmitis after CE

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

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  - Presents w/ indolent course or progressive inflammation
  - Bugs: \(P\) acnes, coag (-) Staph, fungus

**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? 3-4 months

What is the range? Two weeks to several years
Q

- Post-op Endophthalmitis after CE
  - **Acute** = Within 6 weeks of surgery
    - Bugs: Coag (-) Staph, Staph aureus, Strep sp
    - Management: Per EVS
  - **Chronic** = More than 6 weeks after surgery
    - Presents w/ indolent course or progressive inflammation
    - Bugs: *P acnes*, coag (-) Staph, fungus

*Is the inflammation in *P acnes* chronic post-op endophthalmitis granulomatous, or nongranulomatous?*
Post-op Endophthalmitis after CE

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  - Bugs: Coag (-) *Staph*, *Staph aureus*, *Strep sp*
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Granulomatous
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*Is the inflammation in P acnes chronic post-op endophthalmitis granulomatous, or nongranulomatous?*
Granulomatous

*What is the classic response to a trial of steroids?*
Post-op Endophthalmitis after CE

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

---

*Is the inflammation in P acnes chronic post-op endophthalmitis granulomatous, or nongranulomatous?*
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
Post-op Endophthalmitis after CE

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

**Chronic** = More than 6 weeks after surgery
- Presents with indolent course or progressive inflammation
- Bugs: **P acnes**, **coag (-) Staph**, **fungus**
  - Peripheral white plaque in bag = one of the above bugs
Post-op Endophthalmitis after CE

**Acute** = Within 6 weeks of surgery
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- Presents w/ indolent course or progressive inflammation
- Bugs: *P acnes*, coag (-) *Staph*, fungus
  - Peripheral white plaque in bag = *P acnes*
P acnes post-CE endophthalmitis
*P. acnes* post-CE endophthalmitis
**Q**

- **Post-op Endophthalmitis after CE**
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    - Bugs: *P acnes*, coag (-) *Staph*, fungus
      - Peripheral white plaque in bag = *P acnes*

*How does the fact that *P acnes* is an anaerobe play a role in its virulence as a cause of chronic post-op endophthalmitis?*
Post-op Endophthalmitis after CE

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    - Peripheral white plaque in bag = *P. acnes*

How does the fact that *P. acnes* is an anaerobe play a role in its virulence as a cause of chronic post-op endophthalmitis?

The space between the IOL and the bag is relatively anaerobic, thus allowing *P. acnes* to flourish, eventually forming a colony large enough to be seen at the slit lamp (ie, the notorious ‘white plaque’).
Post-op Endophthalmitis after CE

- **Acute** = Within 6 weeks of surgery
  - Bugs: Coag (-) Staph, *Staph aureus*, *Strep* sp
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Suppose you (mis)took a *P acnes* plaque for a PCO, and YAG’d it. What would likely result?
Post-op Endophthalmitis after CE

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Suppose you (mis)took a *P. acnes* plaque for a PCO, and YAG’d it. What would likely result?
Seeding of the vitreous with the organism, which would cause the vitritis to worsen
Post-op Endophthalmitis after CE

**Acute** = Within 6 weeks of surgery

- Bugs: Coag (-) Staph, Staph aureus, Strep sp
- Management: Per EVS

**Chronic** = More than 6 weeks after surgery

- Presents w/ indolent course or progressive inflammation
- Bugs: *P. acnes*, coag (-) Staph, fungus
  - Peripheral white plaque in bag = *P. acnes*
- Management of *P. acnes* post-op endophthalmitis:
  - Intraocular antibiotics are usually **not** helpful, unless it follows and
    ---in which case, use abx

Intraocular antibiotics are usually not helpful, unless it follows and...
Post-op Endophthalmitis after CE

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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
  - Bugs: *P acnes*, coag (-) *Staph*, fungus
    - Peripheral white plaque in bag = *P acnes*
  - Management of *P acnes* post-op endophthalmitis:
    - Intraocular antibiotics are usually **not** helpful, unless it follows PPV and capsulectomy--in which case, use **vancomycin**
Post-op Endophthalmitis after CE

- **Acute** = Within 6 weeks of surgery
  - Bugs: Coag (-) Staph, Staph aureus, Strep sp
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  - Bugs: *P. acnes*, coag (-) Staph, fungus
    - Peripheral white plaque in bag = *P. acnes*
  - Management of *P. acnes* post-op endophthalmitis:
    - Intraocular antibiotics are usually not helpful, unless it follows PPV and capsulectomy--in which case, use vancomycin
    - If recurs: IOL removal or exchange surgery
Post-op Endophthalmitis after CE

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

- **Chronic** = More than 6 weeks after surgery
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    - Intraocular antibiotics are usually not helpful, unless it follows PPV and capsulectomy--in which case, use vancomycin
    - If recurs: IOL removal or exchange
Post-op Endophthalmitis after CE

Which fungi are most commonly implicated in chronic post-CE endophthalmitis?

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

Management of *P. acnes* post-op endophthalmitis:

- Intraocular antibiotics are usually not helpful, unless it follows PPV and capsulectomy--in which case, use vancomycin
- If recurs: IOL removal or exchange
Post-op Endophthalmitis after CE

Within 6 weeks of surgery:
- Bugs: Coag (-) Staph, Staph aureus, Strep sp
- Management: Per EVS

More than 6 weeks after surgery:
- Presents with indolent course or progressive inflammation
- Bugs: P acnes, coag (-) Staph, fungus
  - Peripheral white plaque in bag = P acnes
- Management of P acnes post-op endophthalmitis:
  - Intraocular antibiotics are usually not helpful, unless it follows PPV and capsulectomy—in which case, use vancomycin
  - If recurs: IOL removal or exchange

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

- **Acute** = Within 6 weeks of surgery
  - Bugs: *Coag (-) Staph, Staph aureus, Strep sp*
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  - Presents with indolent course or progressive inflammation
  - Bugs: *P acnes, coag (-) Staph, fungus*
    - Peripheral white plaque in bag = *P acnes*
  - Management of *P acnes* post-op endophthalmitis:
    - Intraocular antibiotics are usually **not** helpful, unless it follows PPV and capsulectomy—in which case, use **vancomycin**
    - If recurs: IOL removal or exchange

---

**Q**

- 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?

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

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

- **Management of P. acnes post-op endophthalmitis:**
  - Intraocular antibiotics are usually *not* helpful, unless it follows PPV and capsulotomy--in which case, use vancomycin
  - If recurs: IOL removal or exchange
**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?*  

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

- **Management of *P acnes* post-op endophthalmitis:**  
  - Intraocular antibiotics are usually **not** helpful, unless it follows PPV and capsulectomy--in which case, use **vancomycin**.
  - If recurs: **IOL removal or exchange**.
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 \textit{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:

\begin{itemize}
  \item \textbf{Anterior segment:}
  \item \textbf{Vitreous:}
\end{itemize}

\begin{itemize}
  \item Bugs: \textit{P. acnes}, coag (-) \textit{Staph}, \textit{fungus}
    \begin{itemize}
      \item Peripheral white plaque in bag = \textit{P. acnes}
    \end{itemize}
  \item Management of \textit{P. acnes} post-op endophthalmitis:
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      \item Intraocular antibiotics are usually \textbf{not} helpful, unless it follows PPV and capsulectomy—\textbf{in which case, use} \textbf{vancomycin}
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Post-op Endophthalmitis after CE

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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:

- Bugs: P. acnes, coag (-) Staph, fungus
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Management of P. acnes post-op endophthalmitis:
- Intraocular antibiotics are usually not helpful, unless it follows PPV and capsulectomy--in which case, use vancomycin.
- If recurs: IOL removal or exchange.
Post-op Endophthalmitis after CE

Which fungi are most commonly implicated in chronic post-CE endophthalmitis?

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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

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

- Peripheral white plaque in bag = *P acnes*

Management of *P acnes* post-op endophthalmitis:

- Intraocular antibiotics are usually not helpful, unless it follows PPV and capsulectomy—*in which case, use vancomycin*
- If recurs: IOL removal or exchange
A/Q

Post-op Endophthalmitis after CE

Which fungi are most commonly implicated in chronic post-CE endophthalmitis?
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How does fungal post-CE endophthalmitis present?
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**Bugs:** *P. acnes*, coag (-) *Staph*, fungus

- Peripheral white plaque in bag = *P. acnes*

**Management of *P. acnes* post-op endophthalmitis:**
- Intraocular antibiotics are usually not helpful, unless it follows PPV and capsulectomy--in which case, use vancomycin
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Fungal endophthalmitis: ‘String of pearls’ in the vitreous
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.

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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.

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.
Post-op Endophthalmitis after CE

**Which fungi are most commonly implicated in chronic post-CE endophthalmitis?**
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**Bugs:**
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Post-op Endophthalmitis after CE

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*What about systemic antifungals?*
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Q

Post-op Endophthalmitis after CE

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

- **Chronic** = More than 6 weeks after surgery
  - Presents w/ indolent course or progressive inflammation
  - Bugs: *P acnes?* coag (-) *Staph?* fungus?
  - Peripheral white plaque in bag = *P acnes*

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

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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Which three culture media should be employed?

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If the identity of the organism is in question, how should the clinician proceed?
By obtaining aqueous (and vitreous, if PPV is performed) samples for culture and stains.

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

VWS
Post-op Endophthalmitis after CE

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If the identity of the organism is in question, how should the clinician proceed?
By obtaining aqueous (and vitreous, if PPV is performed) samples for culture and stains.

Which two stains should be used?
- Gram
- Giemsa
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Which is of greater utility--cultures, or stains?
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If the identity of the organism is in question, how should the clinician proceed? 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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Peripheral white plaque in bag = *P. acnes*. 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?

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

Intraocular antibiotics are usually not helpful, unless it follows PPV and capsulectomy--in which case, use vancomycin.

If recurs: IOL removal or exchange.
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What does the **UGH** in **UGH syndrome** stand for?

UGH: Uveitis-glaucoma-hyphema (syndrome)

Advances in IOL manufacturing have made it an uncommon occurrence.
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*Uveitis-glaucoma-hyphema (syndrome)*

**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.
UGH syndrome
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**What are the main risk factors for post-CE endophthalmitis?**

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What are the main risk factors for post-CE endophthalmitis?
- Capsular rupture
- Prolonged surgery time
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Which factor presents the largest increase in relative risk of post-op endophthalmitis?
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What is the Infectious Dose 50 (ID50) for Staph epi if the capsule is intact?
- About one million organisms

What is the ID50 if the capsule is ruptured (ie, if the Staph epi gets into the vitreous)?
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Noninfectious endophthalmitis after CE
● **Noninfectious** endophthalmitis after CE

  - Noninfectious endophthalmitis is also known as toxic anterior segment syndrome (TASS).

  - Time to presentation: 12-24 hours after surgery.

  - Key difference in presentation from infectious endophthalmitis: Markedly worse corneal edema.

  - Pathogenesis: Immune reaction to compromised surgical materials; e.g.:
    - Denatured viscoelastic
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How is the diagnosis of TASS made?

It is a diagnosis of exclusion—endophthalmitis in the absence of positive cultures and stains.

How is it treated?

- Steroids
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## Infectious vs Noninfectious Post-op Endophthalmitis: Compare and Contrast

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### Infectious vs Noninfectious Post-op Endophthalmitis: Compare and Contrast

- **Onset latency**: TASS <24 hours, Acute Bacterial Endophthalmitis >2 days.
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What is the only pre-op routine proven to reduce endophthalmitis risk? 5% povidone-iodine (PI) gtts and 10% PI skin prep.

What should you do with a prosthetic fellow eye? Take it out and clean it.

What about prophylactic systemic antibiotics? YES if immunocompromised (use PO cipro). NO for heart valves or MVP (not necessary because CE does not produce a bacteremia).

With regards to cataract extraction (CE) surgery...

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\[MVP = \text{Mitral valve prolapse}\]
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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 endophthalmitis rates compared to placebo infiltration.

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Not so fast. Cefuroxime doesn’t cover *Pseudomonas* and (especially) MRSA. Additionally, intracameral-appropriate doses of cefuroxime are not available in the US, and Big Pharm is not anxious to provide them (poor profit margin).

Like I said: A complex and contentious issue…