

Antibiotic Prophylaxis in Refractive Surgery

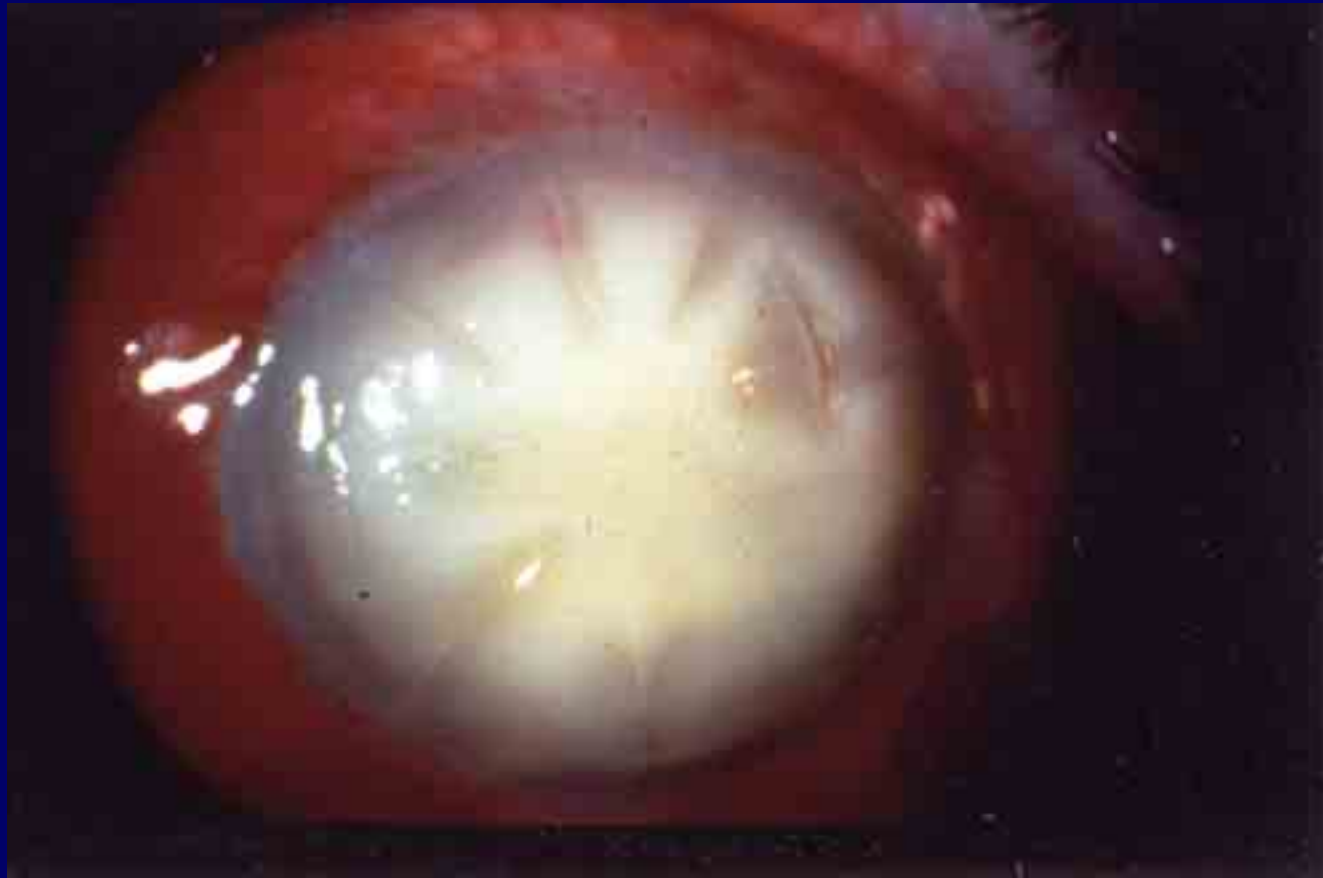
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2 weeks following RK



Post-RK Infections

- 45% within 2 weeks
- Median time reported 8.5 days
- Up to 5 years
- Early: G+ive: Staph Aureus, Staph Epi, Strp pneumo
- G-ive: Pseudomonas, Serratia, Moraxella, Enterobacter

7 days following PRK



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Small Case series:

- In order to elucidate the factors for bacterial keratitis following refractive surgery
- The records of 12 patients with bacterial keratitis following PRK were retrospectively reviewed.

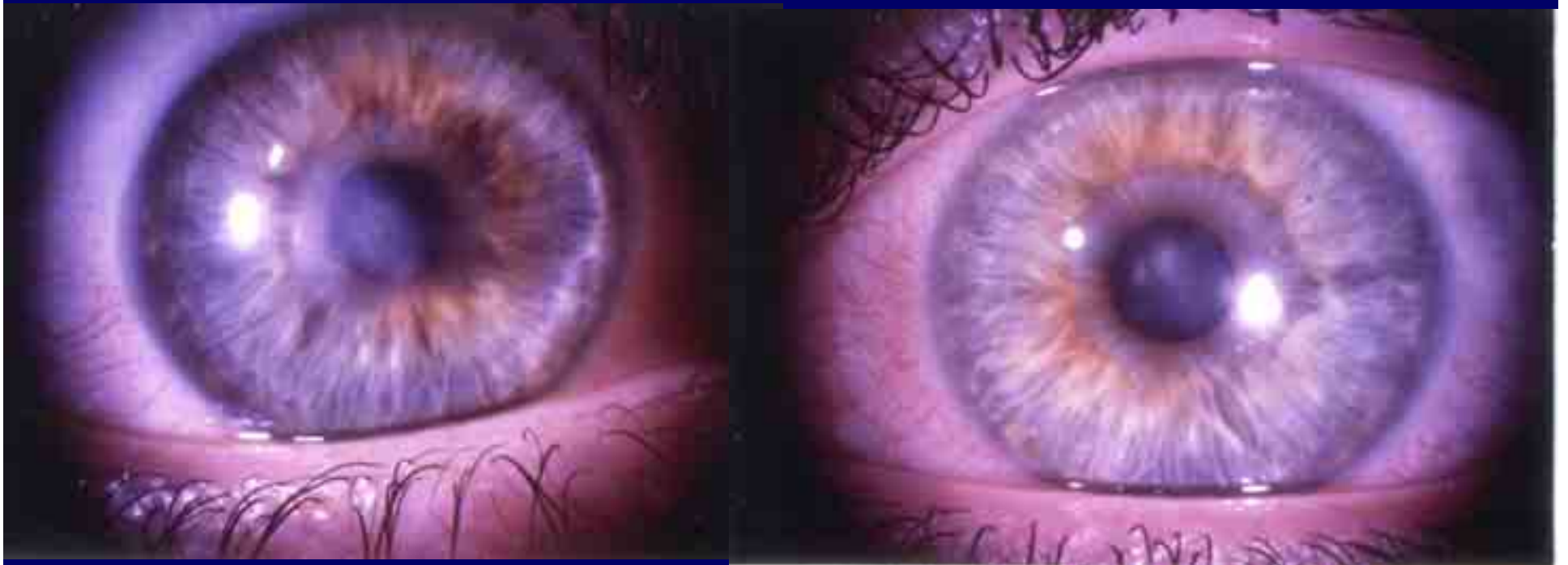
Results:

- Thirteen eyes of 12 patients developed bacterial keratitis following PRK. Four patients manipulated their contact lenses postoperatively.

Results:

- Occupational exposure - one patient developed bilatera infectious keratitis was a medical resident. The patient who developed staph epidermidis was an ICU nurse.

1 week following PRK OD and OS



Results:

- Organisms found – staph aureus (5); staph epidermidis (4); strep pneumoniae (3); strep viridans (1).

2 weeks following PRK



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Results:

Prophylactic antibiotics -

Tobramycin (9); Polytrim (2);

Ciprofloxacin (1).

Discussion:

Literature Review - prophylactic antibiotics, aminoglycosides, Chloramphenicol, Polytrim, Ciprofloxacin.

Conclusion:

- Infectious corneal ulceration is an uncommon, but serious PRK complication. Health care workers may develop keratitis from microbes associated with nosocomial infections.

Conclusion:

- Gram-positive organisms are the most common pathogens, and the prophylactic antibiotic regimen should be broad-spectrum. Ideal perioperative antibiotic - broad spectrum, high potency, sustained tear film levels, high stability, low allergenic potential, low toxicity.

Antibiotic absorption
into the hydrated and
dehydrated cornea.(a small
animal study)

Donnenfeld et al 1999

Methods:

30 rabbit corneas were dehydrated under an operating microscope for 2 minutes.

The rabbit corneas were hydrated with four drops of Ciprofloxacin, Ofloxacin, or Tobramycin. Controls were hydrated with BSS and 1 minute later given four drops of Ciprofloxacin, Ofloxacin, or Tobramycin.

Methods:

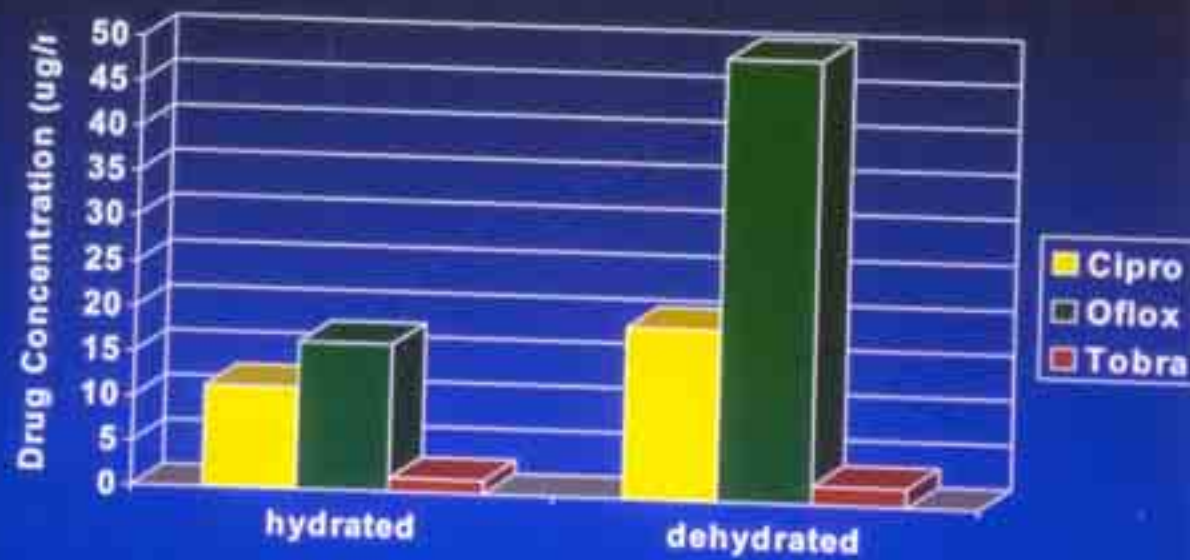
One hour later, the corneas were excised and digested. Stromal antibiotic levels were determined by HPLC.

Results:

Pachymetry normal – 0.435mm.

Dehydrated 0.327 mm.

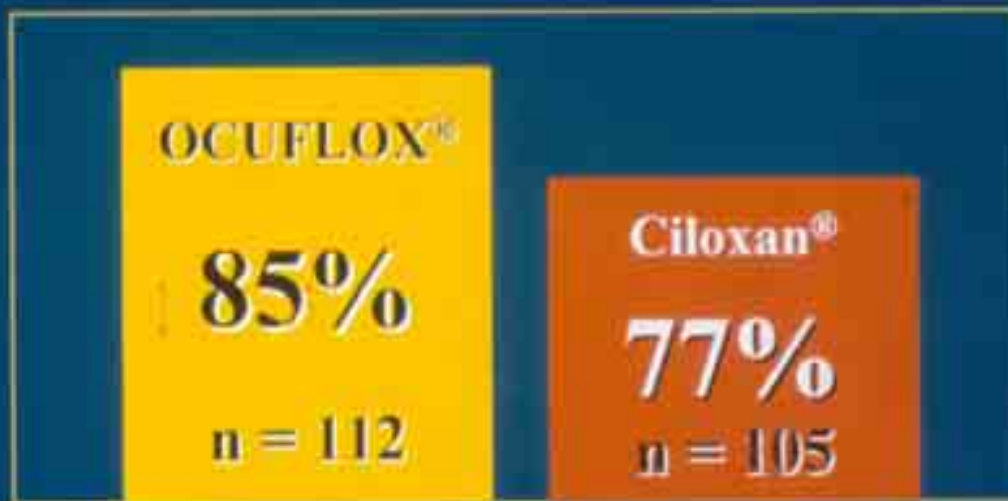
RESULTS



Conclusions:

The cornea is a therapeutic “sponge”

Healing rates of OCUFLOX[®] and Ciloxan[®] in corneal ulcers



In a randomized clinical study of patients with corneal ulcers,¹ healing occurred in 85% of OCUFLOX[®] patients vs 77% of Ciloxan[®] patients.

1. La KL, Prajna NV, McDonnell PJ. Comparison of ofloxacin and ciprofloxacin in the therapy of bacterial keratitis. Presented at: The ARVO Annual Meeting; May 10, 1990; Ft Lauderdale, Fla.

Ciloxan[®] is a registered trademark of Alcon Laboratories, Inc.

DLK: Diffuse Lamellar Keratopathy

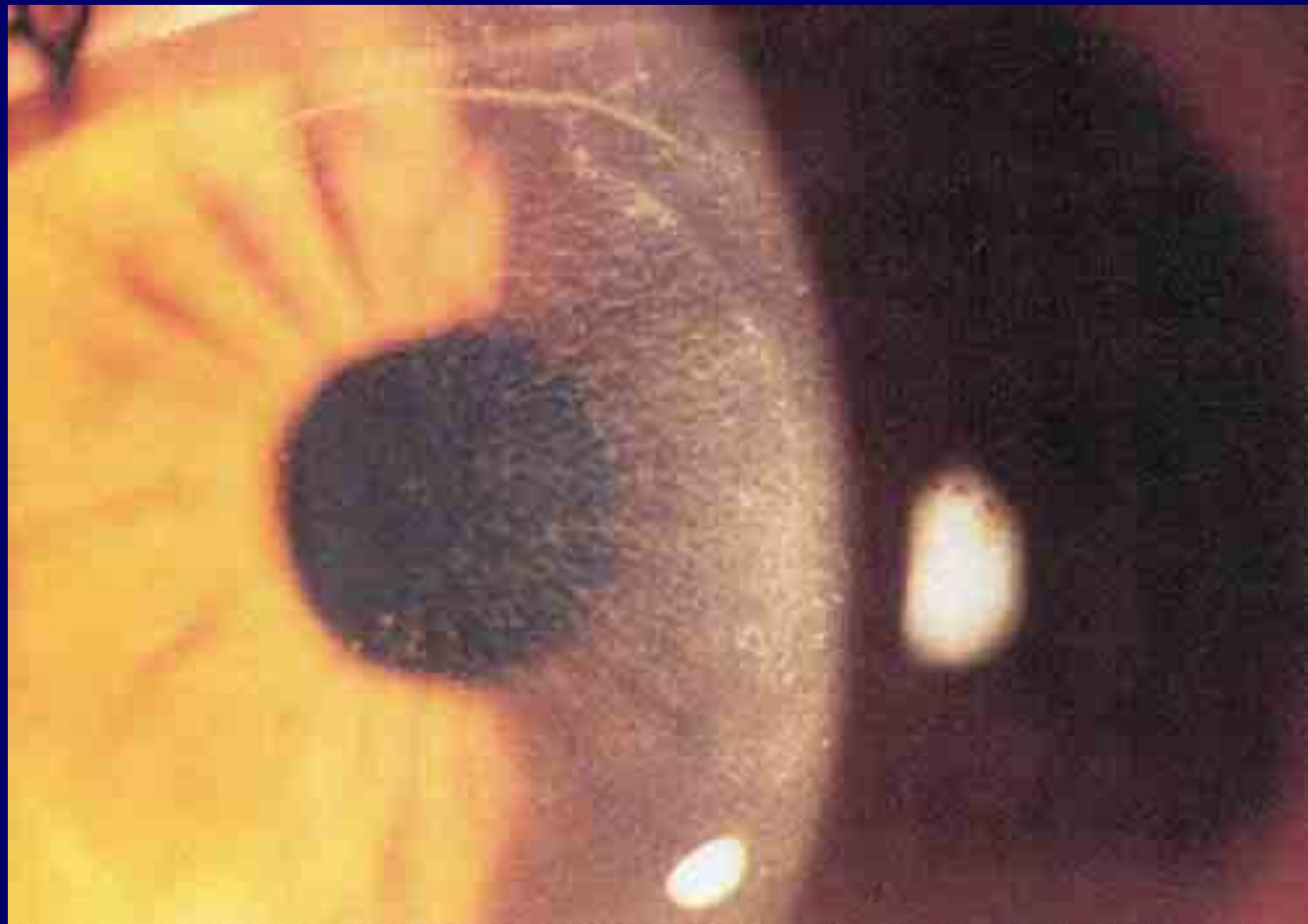
- Sands of the Sahara syndrome
- Cleaning detergents
- Meibomian secretions and eyelid debris
- Microkeratome blades (lubricant, rust, debris)

DLK

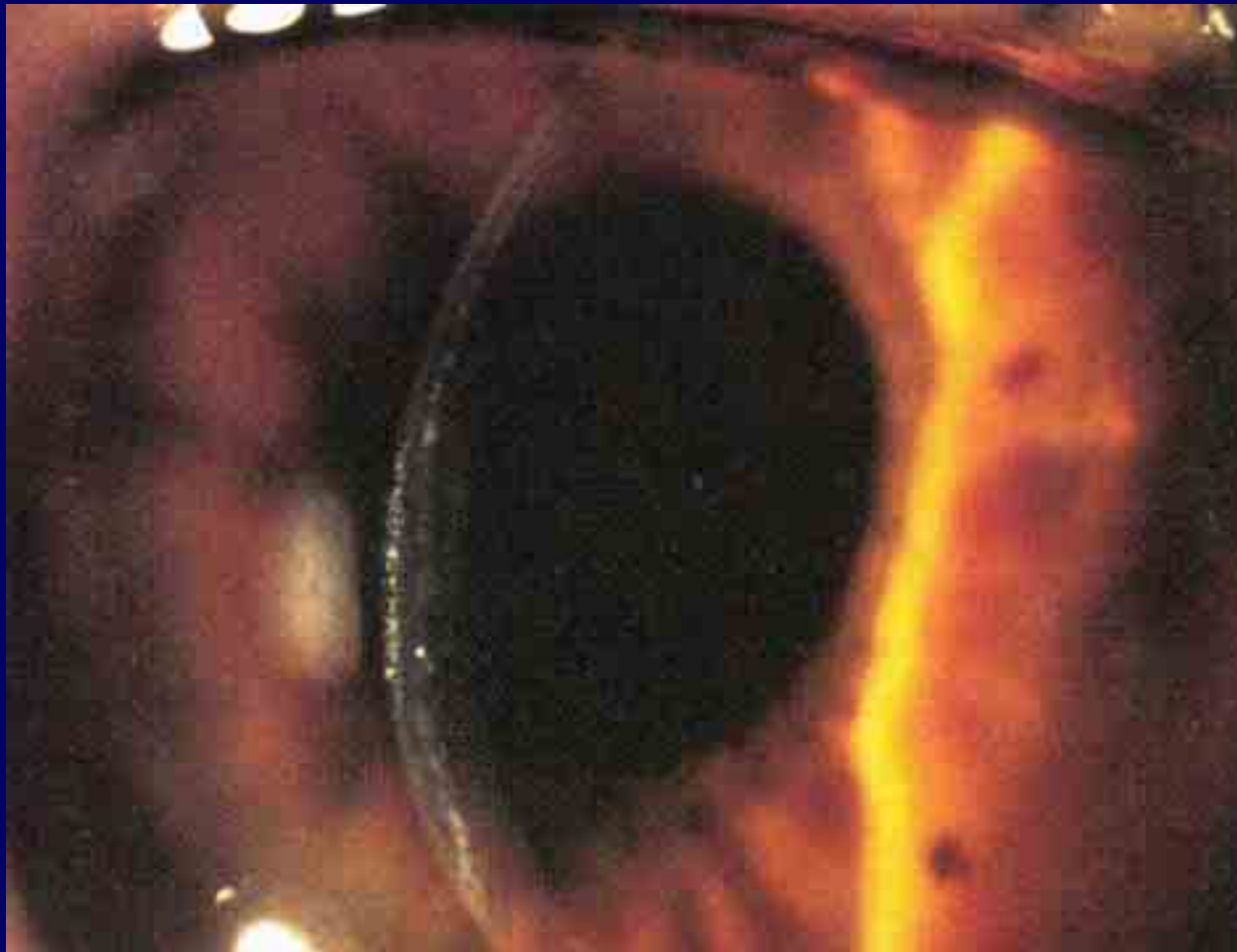
- Tabletop sterilization units
- Excimer laser energy
- BSS
- Benzalkonium chloride
- Particulate matter

DLK

3 days postop LASIK with AK



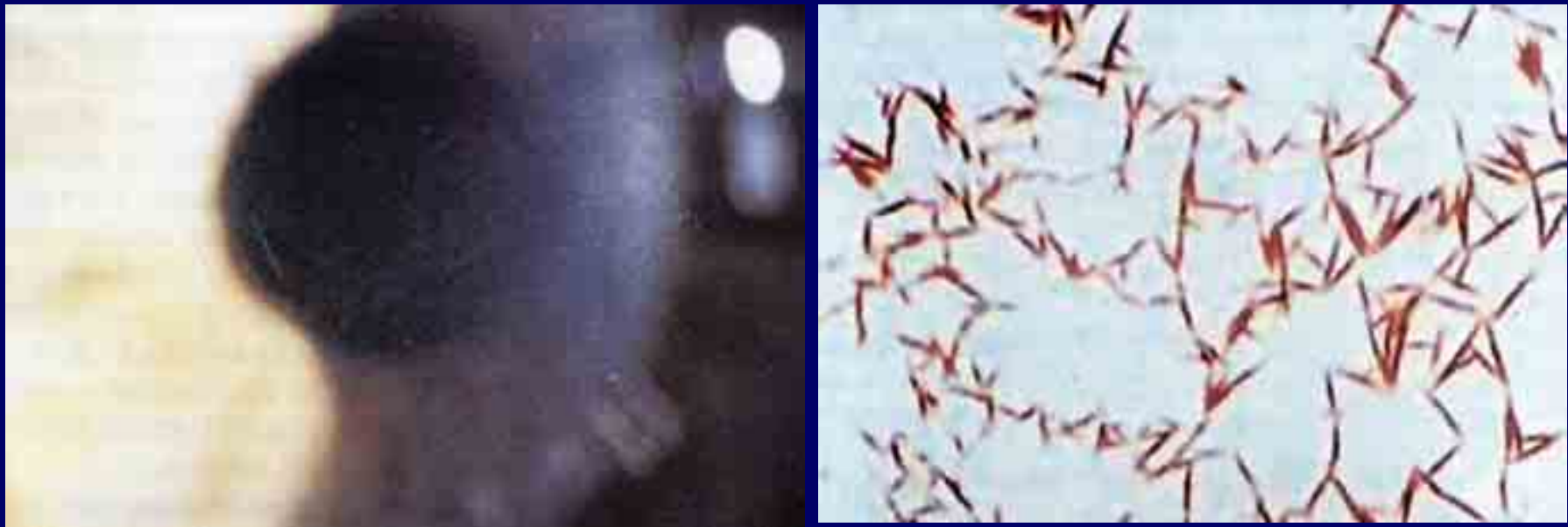
DLK 2 days following LASIK



DLK postop day 1, attributed to inter-lamellar heme (MacRae, Macaluso, Rich 1999)



DLK postop day 1, attributed to
endotoxins from G- biofilms in
sterilizer reservoirs (Holland, Mathias, Morck 2000)

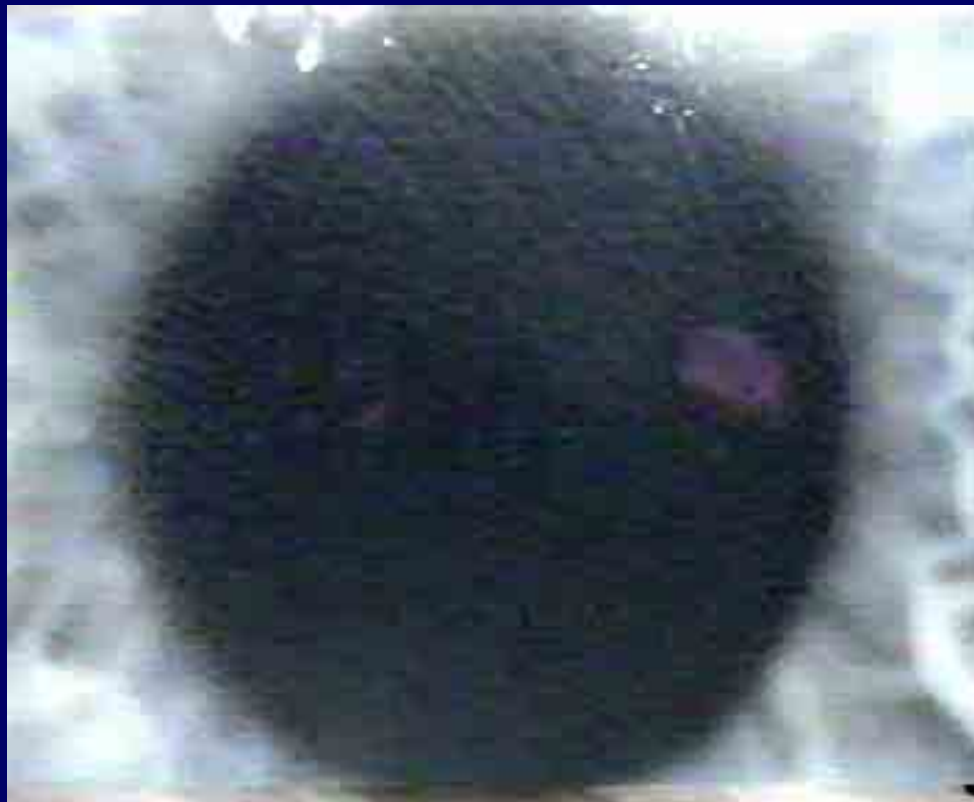


- Gram neg rods *Burkholderia pickettii*

DLK Differentiate from:

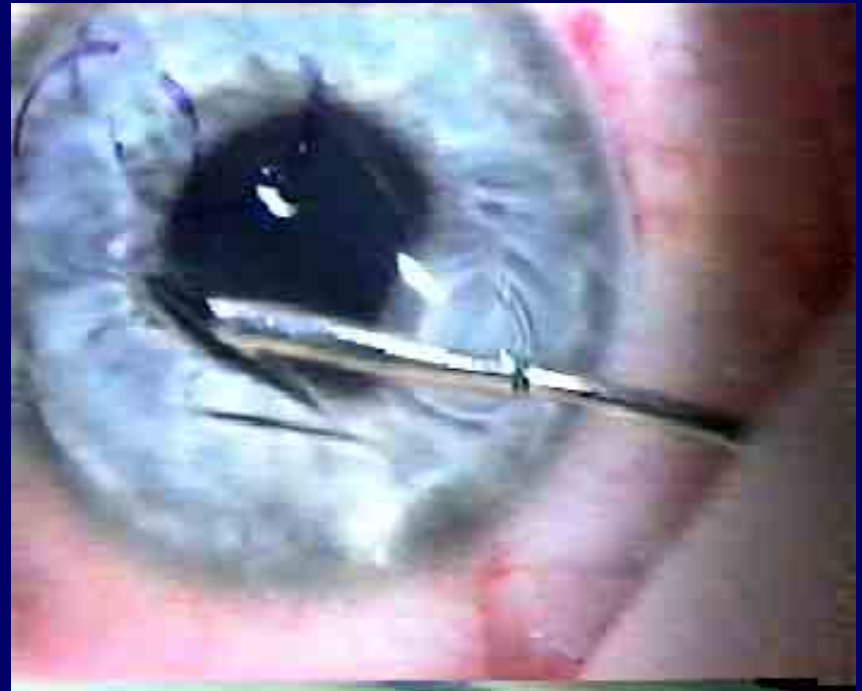
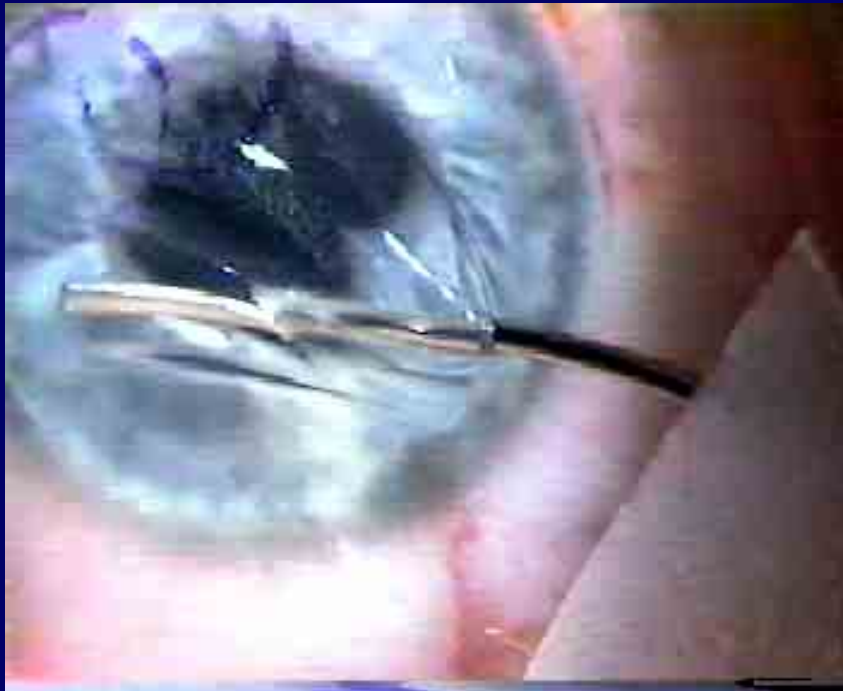
- Infection
- Medication deposits
- CTK: Central toxic keratopathy (day 4-5, no Rx, severe hyperopic shift, keratocyte damage-cornea melt)

DLK 5 days postop

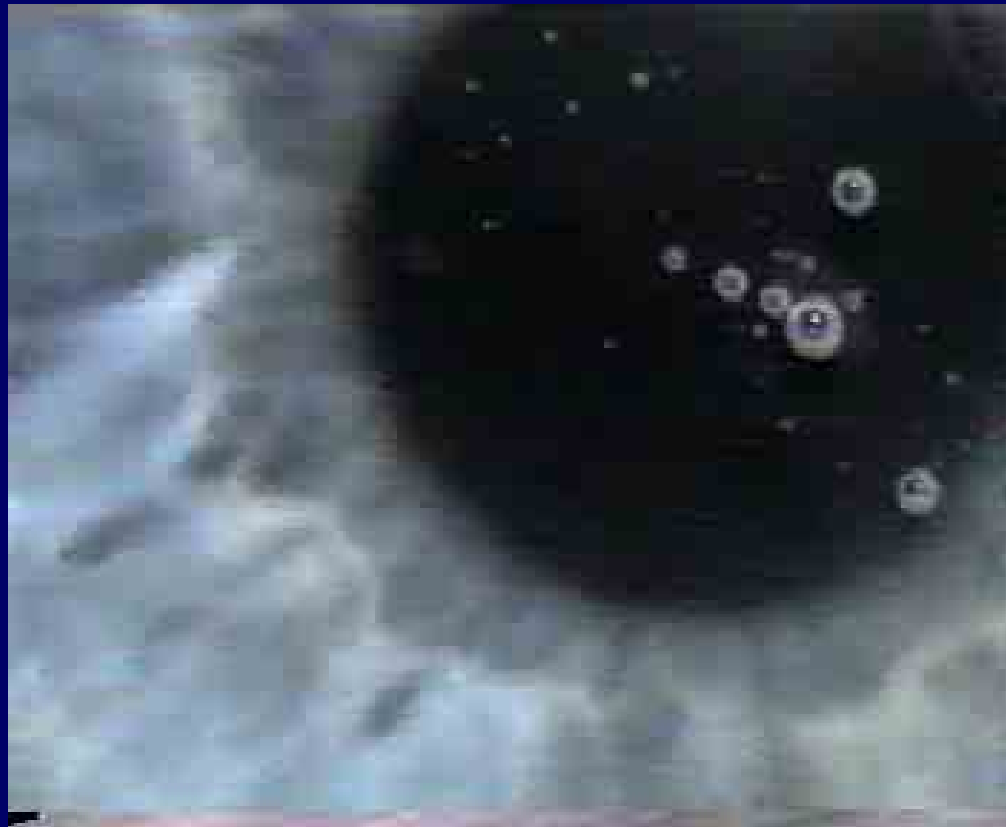


Wash-out of “DLK”

Ciloxan inter-lamellar deposition



Following irrigation



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Thank you

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