

Blebitis and Bleb-Associated Endophthalmitis

DEFINITIONS

BLEBITIS

- An isolated bleb infection characterized by :
- Localized conjunctival hyperemia, associated with a mucopurulent infiltrate identified within the bleb or within the peri-bleb area, giving the appearance of a “white on red” conjunctiva.
- Blebitis may be associated with mild to moderate inflammation of the anterior segment, but typically there is **No vitritis**

BLEB-ASSOCIATED ENDOPHTHALMITIS

- An infected bleb with associated intraocular infection characterized by a hypopyon, a vitritis, and/or a positive vitreous culture.
- Early onset endophthalmitis usually occurs within the first 2 weeks following surgery.
- Late-onset bleb-associated endophthalmitis, typically occurs months to years postoperatively.

RISK FACTORS

- A leaking bleb.
- Chronic bacterial blepharitis or conjunctivitis.
- Keratitis sicca.
- Use of contaminated eye drops or bottle tips.
- Contact lens wear.
- Chronic use of topical antibiotics.
- Early postoperative complications such as early wound leak, flat anterior chamber (AC), and suprachoroidal hemorrhage.
- Inferiorly placed trabeculectomies.
- After filtering surgery with mitomycin C and 5-fluorouracil.
- Nasolacrimal duct obstruction.
- Dementia (poor hygiene).
- Poor follow-up.
- Use of systemic corticosteroids.
- Juvenile glaucoma.
- Bleb-needling.
- Trauma.

INCIDENCE

- The incidence of acute- and late-onset bleb-related infections ranges from 0.4% to 6.9%.
- In contrast, the reported incidence of acute postoperative endophthalmitis after other types of intraocular surgery is significantly lower at 0.05%.

Poulsen EJ, Allingham RR. Characteristic and risk factors of infections after glaucoma filtering surgery. J Glaucoma 2000; 9:438–443.

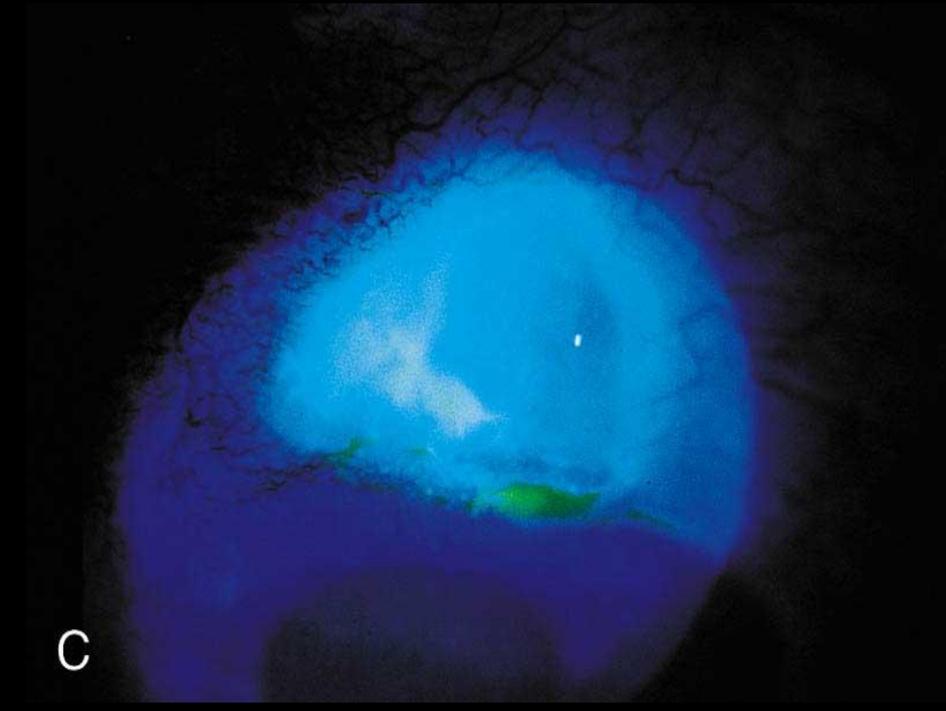
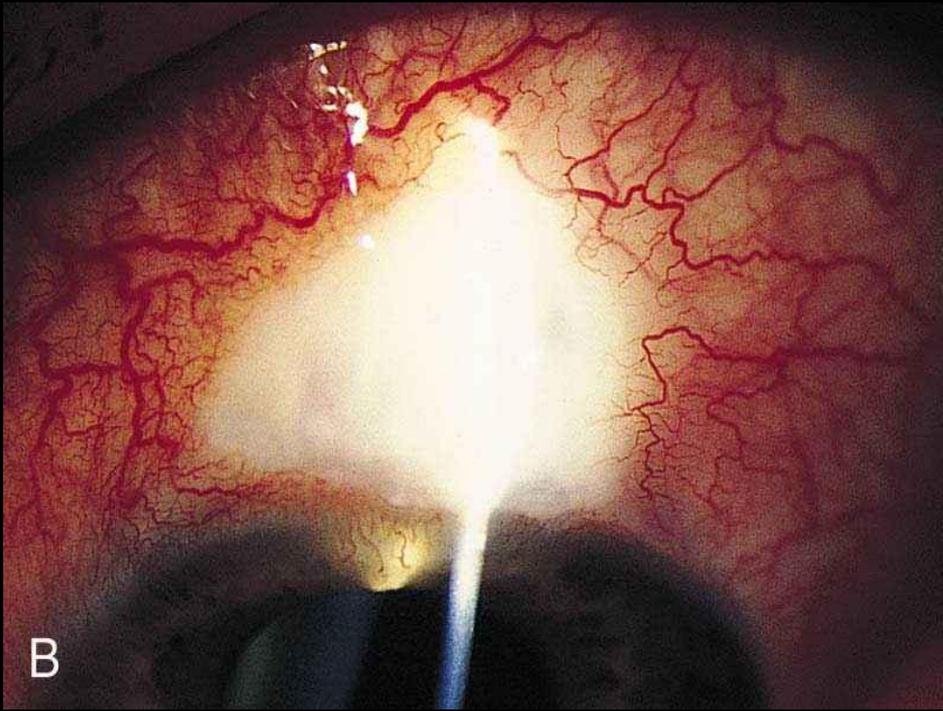
Eifrig CW, Flynn HW Jr, Scott IU, Newton J. Acute-onset postoperative endophthalmitis: review of incidence and visual outcomes (1995–2001).

Ophthalmic Surg Lasers 2002; 33(5):373–378.

SYMPTOMS & SIGNS

Blebitis :

- Tearing , photophobia, ocular injection and foreign body sensation.
- A mucopurulent discharge and severe ciliary and conjunctival hyperemia.
- a milky-white appearance of the bleb with loss of clarity.
- Seidel test is often positive (may have hypotony and even a shallow or flat AC).
- High intraocular pressure is also possible due to obstruction of the sclerostomy site with purulent debris.
- Mild to moderate inflammation of the anterior segment, but typically there is **No vitritis.**



SYMPTOMS & SIGNS

Bleb-Associated Endophthalmitis :

- A rapidly progressive deterioration in their clinical presentation.
- Pain, discharge, reduction of vision, marked hyperemia, and increasing AC reaction with or without a hypopyon.
- vitreous involvement range from just a few vitreous cells to frank intravitreal abscess formation obscuring visualization of the fundus. (B-scan ultrasonography)

MICROORGANISMS

BLEBITIS :

- Early and late :
 - Staphylococcus epidermidis.
 - Propriobacterium acnes.

Ophthalmology 1997; 104(6):986–995.

Ophthalmology 1982; 89:921–928.

Arch Ophthalmol 1994; 112:57–61.

- Staph aureus.

Arch Ophthalmol 1997; 112:4–1128.

BLEB-ASSOCIATED ENDOPHTHALMITIS :

- Early :
 - Staphylococcus epidermidis.
 - Propriobacterium acnes.
- Late :
 - Streptococcus species. (41–57%)
 - Hemophilus influenzae.
 - staphylococcal species.
 - A typical (Moraxella, Mycoplasma, Chlamydia).

PROGNOSIS

- Early bleb-related infections tend to have a favorable prognosis with patients retaining relatively good visual acuity.
(20/400 or better is expected in 41%)
- Late-onset bleb-associated endophthalmitis tends to be caused by more virulent bacteria and is therefore often associated with a poor visual prognosis, occasionally ended by evisceration or enucleation.
(20/400 or better is expected in 33%)

Kangas TA, Greenfield DS, FlynnHWJr, Parrish RK II, Palmberg P. Delayed-onset endophthalmitis associated with conjunctival filtering blebs. *Ophthalmology* 1997; 104(5):746–752.

INVESTIGATIONS

BLEBITIS

- The use of conjunctival cultures should be obtained if possible, before instituting appropriate antibiotic treatment (equivocal).

BLEB-ASSOCIATED ENDOPHTHALMITIS

- Stains and cultures from vitreous and aqueous
- Mandelbaum et al. reported that in the majority of cases (72%), the organism cultured from the intraocular contents (aqueous and vitreous) was different from the organism isolated from the ocular surface.

Mandelbaum S, Forster RK, Gelender H, Culbertson W. Late onset endophthalmitis associated with filtering blebs. *Ophthalmology* 1985; 92:964–972.

TREATMENT

Blebitis

Isolated blebitis (no AC reaction)

Blebitis

Advanced blebitis
(with mild to moderate AC reaction)

Bleb-associated
endophthalmitis

TREATMENT (Blebitis)

(A) Isolated blebitis (no AC reaction):

- Topical antibiotic drops:
 - 4th generation fluoroquinolone (0.5% moxifloxacin, 0.3% gatifloxacin): 1 drop every 15 min in first hour, then q1h around the clock **OR**
 - Fort. cephazoline (50 mg/mL) or vancomycin (25–50 mg/mL) and tobramycin or gentamycin (14 mg/mL). A drop of each q15 min in first hour, then alternate drops q2h
 - Topical steroids—only after infection has been eradicated.

TREATMENT (**Blebitis**)

(B) Advanced blebitis (with mild to moderate AC reaction):

- Topical antibiotic drops (as earlier)
- Topical steroids—only after leak and infection has been eradicated
- Systemic antibiotic :
 - 4th generation fluoroquinolone (oral 0.5% moxifloxacin, 0.3% gatifloxacin): 400 mg P.O. bid as a loading dose-first day, then 400 mg P.O. qd until the infection is controlled **OR**
 - IV vancomycin (1 g) bid and ceftazidime (1–2 g) tid.

TREATMENT (**Blebitis**)

- As blebitis may be a precursor to endophthalmitis, aggressive antibiotic treatment at this early stage of the infection is recommended to prevent progression to endophthalmitis.
- Hospital admission is advisable.
- The patient's clinical status, especially symptoms of increasing pain or decreasing vision needs to be monitored very carefully over the first 24 h.

TREATMENT (Bleb-associated endophthalmitis)

- Vitreous tap/pars plana vitrectomy (visual acuity dependent - **EVS**)
- Broad-spectrum topical fortified antibiotic drops every half an hour to hourly (as described earlier for blebitis)
- Systemic antibiotics (same as for advanced blebitis earlier)
- Intravitreal antibiotics:
 - vancomycin (1.0 mg/0.1 mL) and ceftazidime (2.25 mg/0.1 mL) or amikacin(0.4 *mg/0.1 mL*)
 - If intravitreal corticosteroids are given: dexamethasone (0.4 *mg/0.1 mL*) (controversial)

PREVENTION

- Patients should be educated by their ophthalmologists to contact them immediately if they notice the onset of the following symptoms: redness, irritation, photophobia, discharge, or reduced vision.
- Any leaking bleb should be treated aggressively.
- Avoid prescribing prophylactic topical antibiotics for chronic postoperative use which can lead to an increase in antibiotic resistance .

THANK YOU
