
Lens-Induced Glaucoma

The lens may cause both open-angle and angle-closure glaucomas, and these are summarized in [Table 4-4](#). The open-angle, lens-induced glaucomas are divided into 3 clinical entities:

- phacolytic glaucoma
- lens particle glaucoma
- phacoantigenic glaucoma

See also BCSC Section 9, *Intraocular Inflammation and Uveitis*, and Section 11, *Lens and Cataract*.

Table 4-4 Lens-Induced Glaucomas

Open-angle

Phacolytic glaucoma
Lens particle glaucoma
Phacoantigenic glaucoma

Angle-closure (see Chapter 5)

Phacomorphic glaucoma
Ectopia lentis

Table 4-4

Lens-Induced Glaucomas

Phacolytic glaucoma

Phacolytic glaucoma is an inflammatory glaucoma caused by the leakage of lens protein through the capsule of a mature or hypermature cataract (Fig 4-10). As the lens ages, its protein composition becomes altered, with an increased concentration of high-molecular-weight lens protein. In a mature or hypermature cataract, these proteins are released through microscopic openings in the lens capsule. The proteins precipitate a secondary glaucoma as these lens proteins, phagocytizing macrophages, and other inflammatory debris obstruct the trabecular meshwork.

The clinical picture usually involves an elderly patient with a history of poor vision who has sudden onset of pain, conjunctival hyperemia, and worsening vision. Examination reveals a markedly elevated IOP, microcystic corneal edema, prominent cell and flare reaction without keratic precipitates (KP), and an open anterior chamber angle (Fig 4-11). The lack of KP helps distinguish phacolytic glaucoma from phacoantigenic glaucoma. Cellular debris may be seen layering in the anterior chamber angle, and a pseudohypopyon may be present. Large white particles (clumps of lens protein) may also be seen in the anterior chamber. A mature or hypermature (morgagnian) cataract is present, often with wrinkling of the anterior lens capsule representing loss of volume and the release of lens material (see Fig 4-10). Although medications to control the IOP should be used immediately, definitive therapy requires cataract extraction.



Figure 4-10

Characteristic appearance of hypermature cataract with wrinkling of the anterior lens capsule, which results from loss of cortical volume. Extensive posterior synechiae are present, confirming the presence of previous inflammation.

(Courtesy of Steven T. Simmons, MD.)

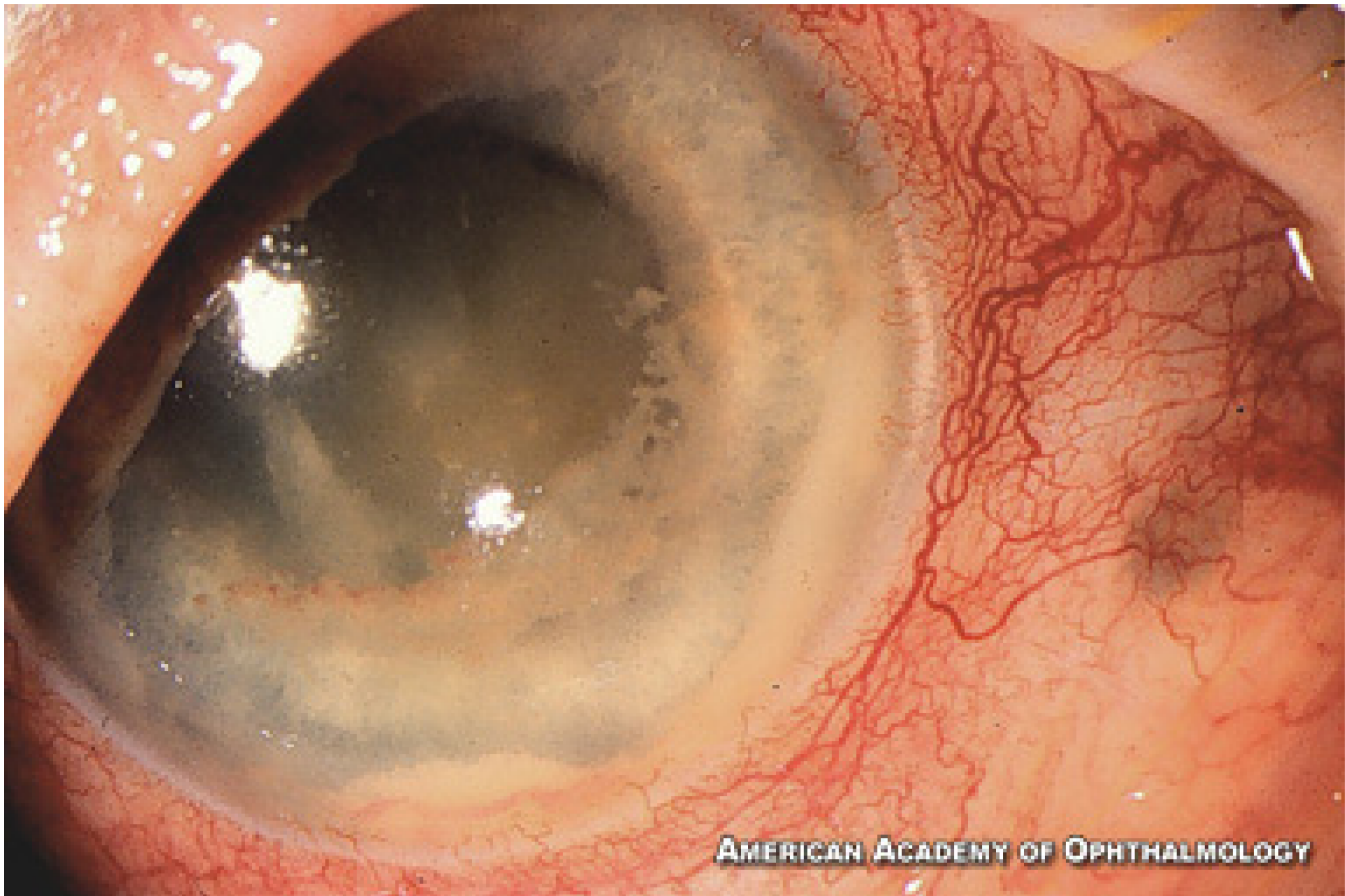


Figure 4-11

Phacolytic glaucoma. The typical presentation of phacolytic glaucoma is conjunctival hyperemia, microcystic corneal edema, mature cataract, and prominent anterior chamber reaction, as demonstrated in this photograph. Note lens protein deposits on endothelium and layering in the angle, creating a pseudohypopyon.
(Courtesy of George A. Cioffi, MD.)

Lens particle glaucoma

Lens particle glaucoma occurs when lens cortex particles obstruct the trabecular meshwork following cataract extraction, capsulotomy, or ocular trauma. The extent of the glaucoma depends on the quantity of lens material released, the degree of inflammation, the ability of the trabecular meshwork to clear the lens material, and the functional status of the ciliary body, which is often altered following surgery or trauma.

Lens particle glaucoma usually occurs within weeks of the initial surgery or trauma, but it may occur months or years later (Fig 4-12). Clinical findings include free cortical material in the anterior chamber, elevated IOP, moderate anterior chamber reaction, microcystic corneal edema, and, with time, the development of posterior synechiae and peripheral anterior synechiae.

If possible, medical therapy should be initiated to control the IOP while the residual lens material resorbs. Appropriate therapy includes medications to decrease aqueous formation, mydriatics to inhibit posterior synechiae formation, and topical corticosteroids to reduce inflammation. If the glaucoma cannot be controlled, surgical removal of the lens material is necessary.

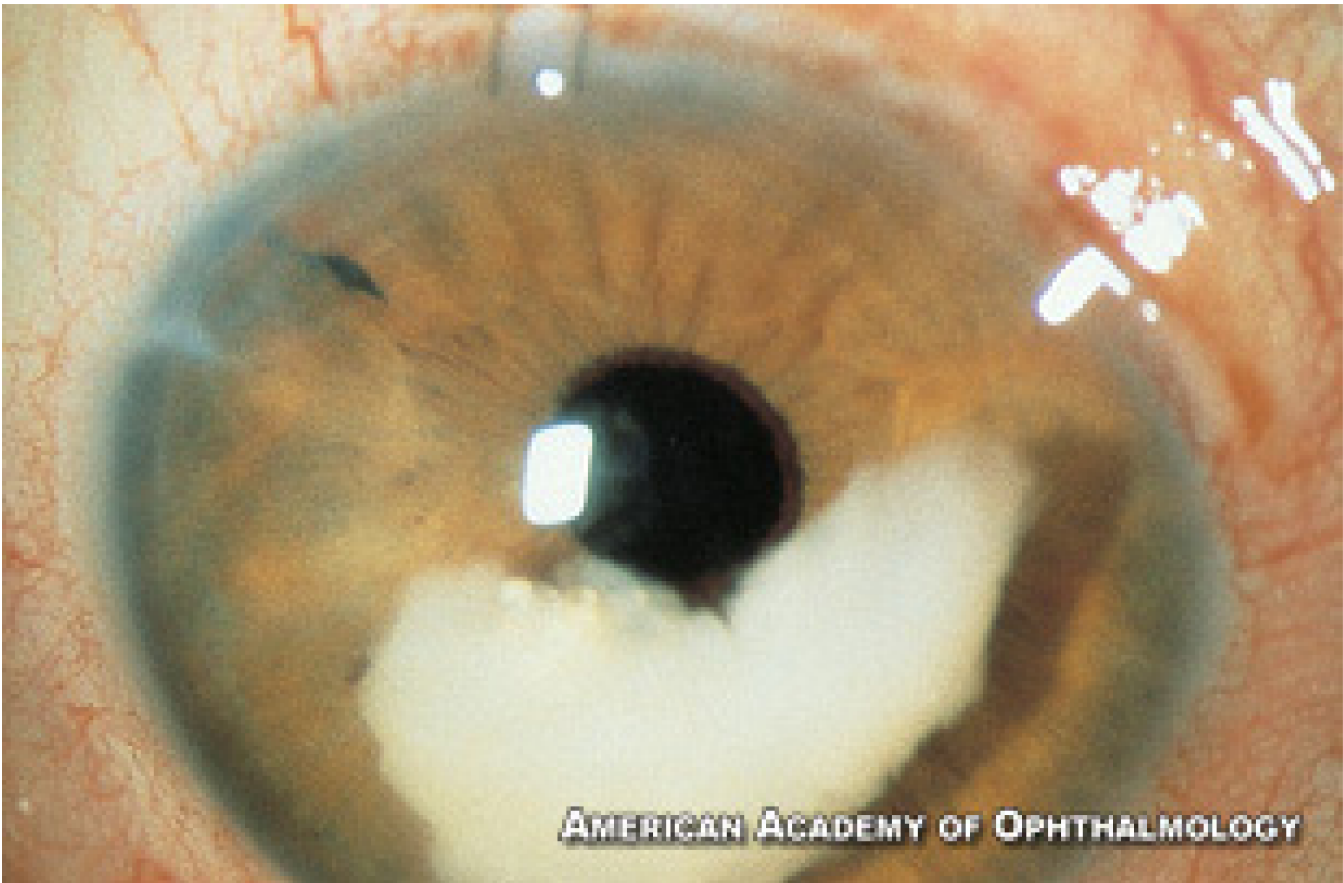


Figure 4-12

Lens particle glaucoma. Despite the large amount of lens cortex remaining in the anterior chamber following cataract surgery, this eye is relatively quiet; the IOP remained normal.

(Courtesy of the Wills Eye Hospital slide collection, 1986.)

Phacoantigenic glaucoma

Phacoantigenic glaucoma (previously known as *phacoanaphylaxis*) is a rare entity in which patients become sensitized to their own lens protein following surgery or penetrating trauma, resulting in a granulomatous inflammation. The clinical picture is quite variable, but most patients present with a moderate anterior chamber reaction with KP on both the corneal endothelium and the anterior lens surface. In addition, a low-grade vitritis, synechial formation, and residual lens material in the anterior chamber may be found. Glaucomatous optic neuropathy, although it may occur, is not common in eyes with phacoantigenic glaucoma. Phacoantigenic glaucoma is treated medically with corticosteroids and aqueous suppressants, which are used to reduce inflammation and IOP. If medical treatment is unsuccessful, residual lens material should be removed.