

## Basics of Glaucoma

Original Article Contributed by: Evan Fenyves, MS

All Contributors: Eugene Rho, BS

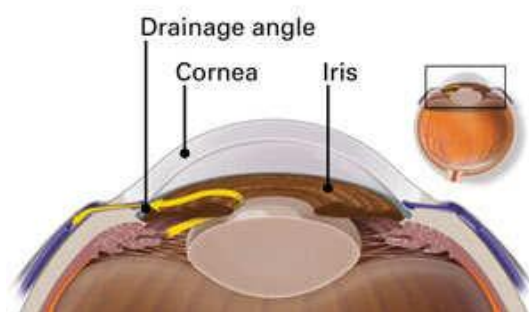
Faculty Editor: Elliott Kanner, MD, PhD

Glaucoma is a disease characterized by degeneration of retinal ganglion cells.<sup>1</sup> It is the leading cause of irreversible blindness in people over 60 years of age in the US.<sup>2</sup> Glaucoma is generally, but not always, associated with an increase in intraocular pressure ( $>21$  mmHg).<sup>1</sup> If the intraocular pressure (IOP) is not corrected, it can lead to damage of the optic nerve. Glaucoma can be classified as primary or secondary and further subdivided into open-angle or closed angle glaucoma.

### Open-Angle Glaucoma

Open-angle glaucoma is the most common type of glaucoma in the US. It is due either to an increased production of fluid within the eye or lack of drainage of this fluid. However, it is not always associated with increased intraocular pressure.<sup>3</sup> This type of glaucoma progresses slowly and is usually painless. Open angle glaucoma leads to blindness less commonly than angle-closure glaucoma due to easy detection on routine eye exam and slower progression (median 70 years progression from full field of vision to blindness<sup>3</sup>).

Open-angle glaucoma can either be primary or secondary. For the former, there is no other pathogenic process contributing to the glaucoma. For secondary open-angle glaucoma there is an identifiable cause of the glaucoma. For example, corticosteroid use can be associated with open-angle glaucoma.



### Angle-Closure Glaucoma

Angle-closure glaucoma ("Closed-angle glaucoma" or "narrow-angle glaucoma") is a result of the iris being too close to the drainage angle and blocking the outflow tract of the fluid within the eye.<sup>2</sup> If fluid drainage becomes completely blocked this leads to a rapid increase in IOP. This is an acute attack and a medical emergency. Symptoms include blurry vision, severe eye pain, headache, nausea, vomiting, and seeing halos.<sup>2</sup> Angle-closure glaucoma can quickly lead to optic nerve damage and blindness if not treated rapidly.

Like with open angle-glaucoma, angle-closure glaucoma can be classified as primary or secondary.<sup>4</sup> Primary angle-closure glaucoma is associated with an anatomical predisposition with no other identifiable cause whereas secondary is due to an identifiable cause such as injury, eye disease, or sometimes eye surgery.<sup>5</sup>

## References:

1. Križaj D. What is glaucoma? 2019 May 30. In: Kolb H, Fernandez E, Nelson R, editors. *Webvision: The Organization of the Retina and Visual System* [Internet]. Salt Lake City (UT): University of Utah Health Sciences Center; 1995-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK543075/>
2. Boyd, Kierstan. "What Is Glaucoma?" Edited by Kevin J McKinney, *American Academy of Ophthalmology*, 9 Oct. 2020, [www.aao.org/eye-health/diseases/what-is-glaucoma](http://www.aao.org/eye-health/diseases/what-is-glaucoma).
3. Jacobs, Deborah S. "Open-Angle Glaucoma: Epidemiology, Clinical Presentation, and Diagnosis." Edited by Matthew F Gardiner, *UpToDate*, Nov. 2020, [www.uptodate.com/contents/open-angle-glaucoma-epidemiology-clinical-presentation-and-diagnosis/contributors](http://www.uptodate.com/contents/open-angle-glaucoma-epidemiology-clinical-presentation-and-diagnosis/contributors).
4. Weizer , Jennifer S. "Angle-Closure Glaucoma ." *UpToDate*, Apr. 2020, [www-uptodate-com.ezproxy.uthsc.edu/contents/angle-closure-glaucoma?search=types%20of%20glaucoma&source=search\\_result&selectedTitle=2~150&usage\\_type=default&display\\_rank=2](http://www-uptodate-com.ezproxy.uthsc.edu/contents/angle-closure-glaucoma?search=types%20of%20glaucoma&source=search_result&selectedTitle=2~150&usage_type=default&display_rank=2).
5. Dietze J, Blair K, Havens SJ. Glaucoma. [Updated 2020 Nov 19]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2020 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK538217/>