

Glaucoma Surgery and Lasers Should Be Performed by Surgeons

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This American Glaucoma Society position article highlights the reasons why patient safety should be of the highest priority in glaucoma treatment. Studies have shown there is no reason to expand scope of practice based on geographic access to care. Surgical procedures, including lasers, should be performed by ophthalmologists who are trained eye physicians and surgeons, especially given the significant difference in training between optometrists and ophthalmologists.

Glaucoma is one of the leading causes of visual disability and irreversible blindness and is often called the “silent thief of sight” as it can progress despite no symptoms. Early detection and appropriate management are crucial in preventing vision loss related to this disease. In the United States, multiple eye care providers play a role in preventing, identifying, and treating eye diseases, including ophthalmologists and optometrists. Although there is a need for care by both ophthalmologists and optometrists, the American Glaucoma Society wishes to highlight the reasons why it is important for patient safety and patient outcomes that glaucoma surgery and laser surgical procedures are performed by ophthalmologists, who are trained eye physicians and surgeons. It is important for policymakers to know that independent organizations have also reached this conclusion. For example, the Vermont Office of Professional Regulation, a state agency under the direction of the General Assembly, conducted extensive and objective research on this topic summarized in a 40-page document; they could “NOT conclude that optometrists are properly trained in and can safely perform the proposed advanced procedures.”¹ Furthermore, they found “there is little need for and minimal cost savings associated with expanding the optometric scope of practice to include advanced procedures.”

This position article highlights the reasons why patient safety should be of the highest priority in glaucoma treatment. Studies have shown there is no reason to expand scope of practice based on geographic access to care. Therefore, all patients deserve equitable care when undergoing surgical procedures that should be performed by

ophthalmologists, who are trained eye physicians and surgeons, especially because there is a significant difference in training between optometrists and ophthalmologists.

1. Access to Eye Care and Ophthalmic Lasers

Access to ophthalmic lasers and surgery is a necessary component of vision care and chronic eye disease management. Geographic access to eye care services is particularly important as patients with eye conditions are typically older, may have other medical comorbidities, and may require caregivers for transportation to an eye care facility. The lack of access to ophthalmic lasers or ophthalmologists has been cited by some as a reason to expand the scope of practice of optometrists. Peer-reviewed publications, however, have demonstrated adequate patient access to an ophthalmologist. Furthermore, geographic access may not improve in states that have allowed optometrists to perform ophthalmic lasers.

Most Medicare beneficiaries live near an ophthalmologist: Lee et al² calculated driving distances for Medicare beneficiaries to the nearest eye care professional. Median driving distances were less than 5 minutes to an ophthalmologist, and 90% of Medicare beneficiaries were within a 30-minute drive to an ophthalmologist (Fig 1).

Expanded optometry scope did not improve geographic access: In Oklahoma, Kentucky, and New Mexico (states that have expanded optometric scope to “improve access”), 75% of residents have an estimated travel time of 30 minutes or less to an ophthalmologist, and greater than 94% of residents have a travel time of 60 minutes or less.³ In Oklahoma, travel distances and times for Medicare beneficiaries who received laser capsulotomy were similar whether the laser was performed by an optometrist or ophthalmologist.⁴ Median driving times were 47 minutes to the ophthalmologist versus 50 minutes to the optometrist performing the laser. The above-mentioned studies have used a data-driven approach to demonstrate that states that expanded optometric scope to include the use

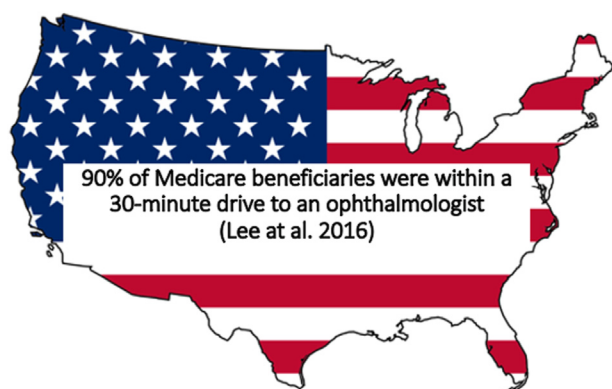


Figure 1. 90% of Medicare beneficiaries were within a 30-minute drive to an ophthalmologist. (Lee et al.², Fig 1).

of ophthalmic lasers did not improve patient geographic access.

The authors of this article acknowledge that ophthalmologists should continue to work alongside optometrists and state/national optometric societies to continually improve glaucoma screening and management. At present, these data show that, on a national level, should patients with glaucoma require an ophthalmic laser procedure, they have adequate access to have this procedure performed by a fully trained ophthalmologist. It is important that our patients receive equitable care across all locations and demographics.

2. Specific Examples of Glaucoma Procedures that Should Be Performed Only by Ophthalmologists

Example 1: Argon and Selective Laser Trabeculoplasty

Why is laser trabeculoplasty performed?

- Glaucoma is less likely to progress if the eye pressure is lower. Eye pressure can be lowered with medications, laser trabeculoplasty, cyclophotocoagulation laser, or incisional glaucoma surgery (trabeculectomy, drainage device, and goniotomy, to name a few). Laser trabeculoplasty is recommended in some but not all types of patients with glaucoma or high eye pressure. There are contraindications to this procedure, so a careful history and exam are needed prior to the procedure being performed.

How is laser trabeculoplasty performed?

- The procedure requires a steady view with a mirrored lens that rests on the tear film of the anesthetized eye using a technique called gonioscopy (Fig 2).⁵ Gonioscopy is essential in being able to evaluate whether a patient is a laser trabeculoplasty candidate and to be able to perform laser trabeculoplasty.

- Figure 3 shows a magnified image of the “angle” and drainage system of the eye using gonioscopy. It is important to confirm that the patient has an open angle

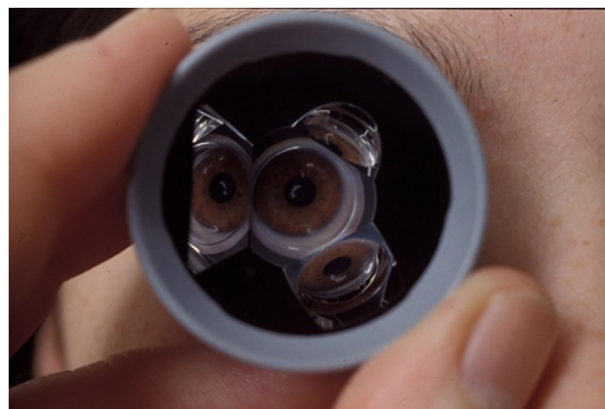


Figure 2. A mirrored gonioscopy lens is placed over the eye to allow visualization of the drainage system of the eye. This technique is important to confirm whether the patient is a good candidate for laser peripheral iridotomy or laser trabeculoplasty. Published in the *Color Atlas of Gonioscopy, Second Edition* by Wallace L.M. Alward, MD and Reid A. Longmuir, MD. Copyright, the University of Iowa. Published with permission of the American Academy of Ophthalmology.⁵

(and no contraindications to laser) and to aim the laser beam over the correct landmark (trabecular meshwork, indicated by the red arrow).

- Being even 0.1 millimeters away from the target could result in increased risk of inflammation, eye pain, bleeding, increase in eye pressure, or corneal damage. One hundred shots of laser energy are usually administered around 360 degrees of the drainage system for a complete treatment. There are important nuances to this procedure that require practice under the direct supervision of an experienced physician, including (1) positioning the patient appropriately; (2) obtaining a good view with the mirrored lens; (3) identifying the correct anatomical target; (4) maintaining a good view and spacing out the laser; and (5) adjusting the laser settings to avoid excess energy.

Example 2: Laser Peripheral Iridotomy

Why is laser peripheral iridotomy performed?

This laser procedure is performed in patients with narrow angles to decrease the risk of progressive angle-closure glaucoma or an acute angle-closure glaucoma attack. Acute angle-closure glaucoma is an eye emergency that causes significant eye pain and blurry vision related to a sudden increase in eye pressure when the drainage system of the eye is blocked. This degree of high eye pressure could cause permanent, irreversible vision damage, and therefore laser peripheral iridotomy is ideally done to prevent this eye emergency from occurring.

What are possible complications of glaucoma laser surgeries?

Complications can include an increase in eye pressure, inflammation, glare, eye pain, double vision, swelling of the cornea, change in vision, formation of cataract, or bleeding (Fig 4).⁶ To minimize complications, it is important to avoid

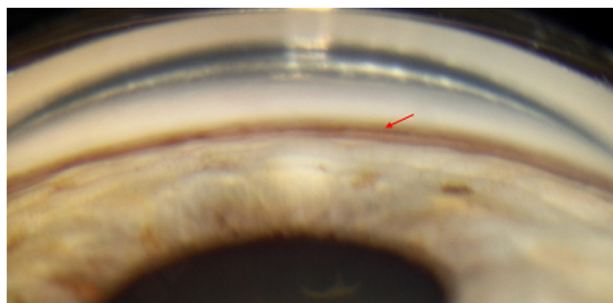


Figure 3. A magnified image of the “angle” and drainage system of the eye using the mirrored gonioscopy lens. It is important to confirm that the patient has an open-angle glaucoma (and no contraindications to laser) and to aim the laser beam over the correct landmark (trabecular meshwork, shown with red arrow; Courtesy of Wallace L.M. Alward, MD. Copyright, the University of Iowa).

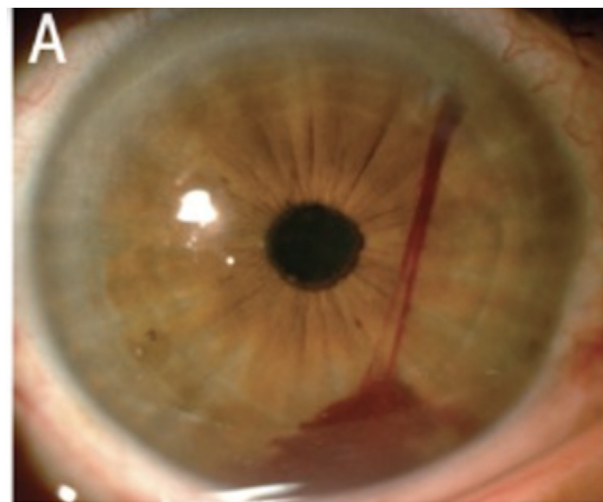


Figure 4. Photograph of blood in the front of the eye (hyphema) after laser iridotomy procedure in a patient on blood thinners. (Published with permission from Galvis et al⁶).

this procedure in certain patients based on their eye examination, history, and/or degree of glaucoma damage. An acute rise in eye pressure could warrant an urgent surgical intervention by a glaucoma surgeon. Therefore, having an established relationship with a glaucoma specialist, or having one nearby, is important to avoid delay. Failure to avoid or properly manage complications related to a glaucoma laser procedure in a timely manner could cause permanent harm to a patient’s vision.

3. What Are the Potential Issues with Optometrists Performing Glaucoma Lasers?

- Lasers performed by optometrists may not be as effective. A recent study found that if laser trabeculoplasty was performed by an optometrist (currently allowed in certain states), patients were more than twice as likely (36% vs. 15%) to require a repeat trabeculoplasty procedure.⁷ This

could suggest inadequate laser treatment during the first session or significantly different treatment algorithms between optometry and ophthalmology. It does raise a flag, as repeat laser procedures are associated with greater cost and dedication of more time and resources from the patient, family members, and health care system. Additionally, repeating laser trabeculoplasty is warranted at certain times and in certain conditions but could cause harm if done too often.

- There is insufficient training in optometry school or in single-day optometry courses regarding (1) indications and contraindications of lasers; (2) how to get a good view of the “angle” of the eye; (3) how to adjust laser settings for each patient; (4) how to manage complications; and (5) when to repeat a laser. As noted in the section below regarding training (Table 1), learning the medical decision-making and

Table 1. Training Requirements of Ophthalmologists Compared with Optometrists^{5,8–13}

	Ophthalmologist	Optometrist
Bachelor’s degree	X	Optional for some schools
4-year medical school	X	
4-year optometry school		X
Comprehensive systemic disease training	X	
National Board exams	X	Components may vary by state
Postgraduate hands-on clinical training		
1-year internship	X	
3-year residency	X	Optional 1 year residency
1- to 2-year fellowship	Optional	
Average hours of clinical experience in training	17 280	1768
Surgical minimums (or averages)		
Glaucoma lasers	9 (34 on average)	Minimum of 1 in Kentucky
Glaucoma surgeries	5 (14 on average)	0
National Board certification		
Continuing education/evaluation		

Differences in certification, continuing education and regulation of optometrist and ophthalmologists are best highlighted in this resource from the AAO⁵

AAO = American Academy of Ophthalmology.

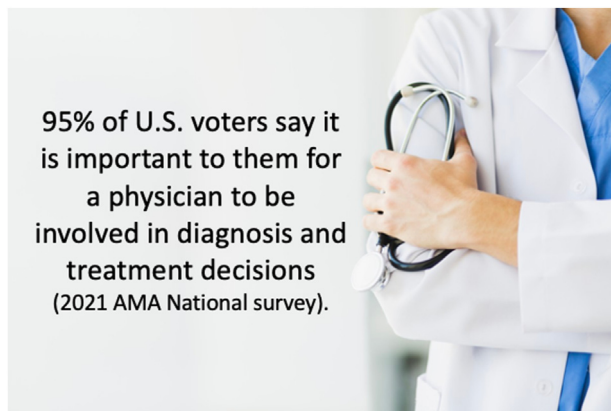


Figure 5. Most US voters (95%) say it is important to them for a physician to be involved in diagnosis and treatment decisions. (2021 AMA National survey: patient sentiment on scope of practice¹⁶).

technical skills to perform laser surgery requires didactics, hands-on training, supervised training on real patients, and experience with managing complications and follow-up, as is offered in ophthalmology residency.^{5,8–13} Therefore, surgical procedures should be performed by ophthalmologists, who are trained eye physicians and surgeons, and can manage patients from beginning to end.

These issues also apply to numerous other laser surgeries (such as laser capsulotomy, cyclophotocoagulation, laser vision correction, and laser-assisted cataract surgery), injections (such as insertion of sustained-release glaucoma medications), and scalpel surgery (such as trabeculectomy, drainage devices, and cataract surgery).

4. Ophthalmology Training Is Intensive with Significant Clinical Hours and Specific Minimum Numbers of Surgical Procedures to Demonstrate Surgical Competency

Ophthalmologists complete a long, rigorous training with numerous licensing exams to become board certified (Table 1).^{8,9} A 4-year undergraduate degree is followed by a 4-year medical degree, then a 1-year hospital-based internship, and a 3-year clinical and surgical ophthalmology residency. During ophthalmology residency training, ophthalmologists must obtain competencies in 7

areas as well as complete a minimum number of glaucoma procedures. On average, 34 glaucoma lasers and 14 other glaucoma surgical procedures are performed by each ophthalmology resident.¹⁰ Some ophthalmologists choose to complete a 1-year fellowship in the surgical and clinical care of glaucoma. They are expected to complete at least 27 lasers and glaucoma surgeries in one year. In reality, an average of 200 glaucoma procedures are performed during a glaucoma fellowship.¹⁴ After residency training, ophthalmologists must pass written and oral examinations to become certified by the American Board of Ophthalmology. Once in practice, ophthalmologists must demonstrate continued competency by completing yearly continuing medical education, American Board of Ophthalmology maintenance of board certification activities, and peer-reviewed ongoing professional practice evaluations within health care organizations.^{11,12}

5. What Do Patients Prefer?

Patients strongly prefer that physicians (holding a medical degree) lead the diagnosis and management of their health care and perform eye surgeries.

Most (88%) patients agree with the statement that only licensed medical doctors or doctors of osteopathic medicine should be able to use the title of “physician.”¹⁵ A national survey reported that 95% of US voters say it is important to them for a physician to be involved in diagnosis and treatment decisions (Figure 5).¹⁶ However, many patients are confused about the level of training and education of their health care provider, and for most it is hard to identify who is a licensed medical doctor or doctor of osteopathic medicine and who is not by reading what services they offer. The differences in training are highlighted in Table 1; more details are available on the AAO website.⁵

In summary, based on the facts presented in this statement and in the interest of patient safety, the American Glaucoma Society strongly believes that glaucoma surgery and laser surgical procedures should be performed by ophthalmologists, who are trained eye physicians and surgeons.

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