House Bill 349 Will Allow Optometrists to Perform Laser Eye Surgery

I am opposed to HB 349 because it lowers the safety standards for performing Laser Eye Surgery.

Optometry schools do NOT properly train students to perform laser eye surgery.

22 of the nation's 24 optometry schools are in states where it is illegal for optometrists to perform laser eye surgery. Thus 95% of optometry students attend optometry schools located in states that prohibit optometrists from performing laser eye surgery on patients. Their training consists of practicing on prosthetics and model eyes instead of actual patients where surgical complications can occur.

In contrast Ophthalmologists (Eye MDs) are required to successfully complete a 3-year eye surgery residency where residents learn how to safely perform laser eye surgery on real patients by diagnosing, managing, and laser surgically treating real patients under the direct 1-on-1 supervision of an experienced attending ophthalmologist laser eye surgeon.

Please vote "No" on HB349 which would lower current Laser Eye Surgery training standards.

Lucian Szmyd, MD.

JAMA Ophthalmology | Original Investigation

Comparison of Outcomes of Laser Trabeculoplasty Performed by Optometrists vs Ophthalmologists in Oklahoma

Joshua D. Stein, MD, MS; Peter Y. Zhao, MD; Chris Andrews, PhD; Gregory L. Skuta, MD

IMPORTANCE Oklahoma is one of the few states where optometrists have surgical privileges to perform laser trabeculoplasty (LTP). Optometrists in other states are lobbying to obtain privileges to perform LTP and other laser procedures. Little is known whether outcomes of patients undergoing this procedure by optometrists are similar to those undergoing LTP by ophthalmologists.

OBJECTIVE To compare outcomes of LTPs performed by ophthalmologists with those performed by optometrists to determine whether differences exist in the need for additional LTPs.

DESIGN, SETTING, AND PARTICIPANTS This retrospective longitudinal cohort study used a health care claims database containing more than 1000 eyes of Medicare enrollees with glaucoma who underwent LTP in Oklahoma from January 1, 2008, through December 31, 2013. For each procedure, the data specify the type of eye care professional who performed the LTP. The rate of LTPs performed by ophthalmologists that required 1 or more additional LTPs in the same eye was compared with the rate of LTPs performed by optometrists. Regression models determined factors affecting risk of undergoing more than 1 LTP in the same eye.

MAIN OUTCOMES AND MEASURES Proportion of enrollees requiring additional LTPs, hazard ratio with 95% CIs of undergoing additional LTPs.

RESULTS A total of 1384 eyes of 891 eligible patients underwent LTP from January 1, 2008, through December 31, 2013. There were 1150 eyes that received LTP (83.1%) by an ophthalmologist and 234 eyes (16.9%) that had the procedure performed by an optometrist. The mean (SD) age at the initial LTP was 77.7 (7.5) years for enrollees with ophthalmologist-performed LTP and 77.6 (8.0) years for those with optometrist-performed LTP (P = .89). Among the 1384 eyes receiving LTP, 258 (18.6%) underwent more than 1 LTP in the same eye. The proportion of eyes undergoing LTP by an optometrist requiring 1 or more subsequent LTP session (35.9%) was more than double the proportion of eyes that received this procedure by an ophthalmologist (15.1%). Medicare beneficiaries undergoing LTP by optometrists had a 189% increased hazard of requiring additional LTPs in the same eye compared with those receiving LTP by ophthalmologists (hazard ratio, 2.89; 95% CI, 2.00-4.17; P < .001) after adjusting for potential confounders.

CONCLUSIONS AND RELEVANCE Considerable differences exist among the proportions of patients requiring additional LTPs comparing those who were initially treated by ophthalmologists with those initially treated by optometrists. Health policy makers should be cautious about approving laser privileges for optometrists practicing in other states until the reasons for these differences are better understood.

Invited Commentaries pages 1 and 1

CME Quiz at jamanetworkcme.com and CME Questions eme160010

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Laser trabeculoplasty (LTP) is a common procedure that can effectively decrease intraocular pressure in patients with primary and some secondary forms of open-angle glaucoma. It can augment the ability to lower intraocular pressure in patients who are already taking glaucoma medications and is useful in patients who have difficulty administering eye drops or with medication adherence. In fact, LTP may be a more cost-effective option for treating glaucoma than medication, especially for patients who have difficulty with adherence.[1,2] The advent of selective LTP contributed to a 46% increase in this procedure among Medicare beneficiaries from January 1, 2002, through December 31, 2009.[3]

Ophthalmologists have been performing LTP since 1979 when the procedure was first developed by Wise and Witter.[4] Recently, optometrists have been lobbying state legislatures for expanded privileges so they may perform LTP. In Oklahoma, optometrists were given permission to perform LTP on patients with glaucoma in 1998.[5] More recently, legislation was passed in Kentucky and Louisiana allowing optometrists to perform laser ocular surgical procedures.[6,7] Ophthalmologists learn how to perform LTP during residency training. The Accreditation Council for Graduate Medical Education mandates that graduating residents perform a minimum of 5 LTPs.[8] Case logs show that the average ophthalmological resident performs 14 LTPs and 83 other laser procedures during residency training.[9] In Oklahoma, training of optometrists to perform lasers involves a 2-day course, "Laser Therapy for the Anterior Segment," which is held at the Northeastern State University Oklahoma College of Optometry. This course consists of 9 hours of lectures and 4 hours of laboratory sessions, including gonioscopy, LTP, laser iridotomy, and capsulotomy.[10]

To our knowledge, there has never been a study comparing outcomes of LTP performed by ophthalmologists vs procedures performed by optometrists. Using a health care claims database containing more than 1000 eyes of Medicare beneficiaries with glaucoma who underwent LTP in Oklahoma, we compared outcomes of those receiving this procedure by ophthalmologists vs enrollees undergoing LTP by optometrists. These analyses may help guide health policy makers in other states who are trying to decide whether to give optometrists privileges to perform laser procedures.

Key Points

Question Are there differences in the frequency and likelihood of undergoing additional laser trabeculoplasty among Medicare enrollees in Oklahoma who underwent this procedure by an ophthalmologist vs others who underwent the procedure by an optometrist?

Findings Among the 1384 eyes receiving laser trabeculoplasty, the proportion of eyes treated by optometrists requiring additional laser trabeculoplasty in the same eye (35.9%) was more than double the proportion of those treated by ophthalmologists (15.1%). Optometrist-treated eyes had a 189% increased risk of requiring additional laser trabeculoplasty.

Meaning Future work seems warranted to substantiate whether the differences identified affect clinical outcomes and costs.

Methods

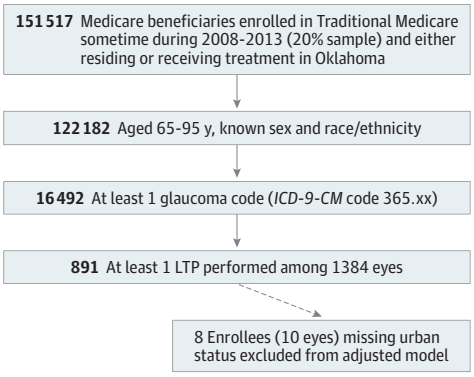
Data Source

We used a 20% nationally representative sample of Medicare claims to identify beneficiaries undergoing LTP. The database contained information including *International Classification of Diseases, Ninth Revision, Clinical Modification* (*ICD-9-CM*)[11] diagnosis codes, *Current Procedural Terminology* (*CPT-4*)[12] procedure codes, National Provider Identifier numbers to identify specific eye care professionals, and service dates for all encounters. Claims data were merged with Medicare denominator files for information on enrollment dates in Medicare and demographic characteristics of the beneficiaries. Data were linked by a patient identifier, allowing longitudinal, person-specific analysis from January 1, 2008, through December 31, 2013. A similar data source was used previously to study patients with ocular diseases.[13,14] The University of Michigan institutional review board approved this study, which used deidentified claims data.

Study Sample

We identified all individuals with any form of glaucoma (*ICD-9-CM* code 365.xx) who underwent 1 or more LTP (*CPT-4* code 65855) from January 1, 2008, through December 31, 2013, in Oklahoma (**Figure 1**). *Current Procedural Terminology* codes do not distinguish argon LTP, selective LTP, and micropulse LTP; therefore, beneficiaries who underwent any of these procedures were included. Individuals younger than 65 and older than 95 years were excluded as were enrollees in Medicare Advantage plans because our data source does not fully describe all care received by persons in such plans. Procedures that were submitted for payment but not paid and those missing eye laterality were also excluded. Each claim specifies whether an ophthalmologist or optometrist performed the LTP and whether it was performed on the right or left eye. Bilateral codes were counted as separate procedures for each eye.

Figure 1. STROBE Sample Selection Figure



Identification of beneficiaries eligible for current study from 20% Medicare claims database. *ICD-9-CM* indicates *International Classification of Diseases, Ninth Revision, Clinical Modification*; LTP, laser trabeculoplasty.

Statistical Analysis

All analyses were performed using SAS software, version 9.4 (SAS Inc) and R, version 3.2.3 (R Foundation for Statistical Computing). Characteristics of the study population were summarized using means (SDs) for continuous variables and frequencies and percentages for categorical variables. For all inference procedures, $P < .05$ (Kaplan-Meier method, Wald test, and Cox proportional hazards regression model) was considered statistically significant.

Receipt of Additional LTPs

The primary outcome was receipt of additional LTPs in the same eye. This outcome was identified as another record of *CPT-4* code 65855 on a separate date on the same eye as the initial procedure. Subsequent LTPs could have been performed by the same eye care professional or an ophthalmologist or optometrist other than the health care professional who performed the initial procedure. The unit of observation was the eye, but a clustering term was included to allow for the correlation between eyes of the same beneficiary.[15] Observations were right censored at the end of eligibility.

We calculated product limit estimates (with robust SEs) of the time to the second LTP as a function of the type of initial eye care professional (ophthalmologist or optometrist). These estimates were compared at 6 months and 3 years with Wald tests. We used proportional hazards regression models (created by generalized estimating equations to allow for correlated observations) to determine a single estimate of the effect of the key predictor variable: type of eye care professional who performed the initial LTP. An additional model was created adjusting for age at initial LTP, sex, race/ethnicity, where the enrollee lived (urban, large rural, or small rural town), and year of the procedure. In a separate model, we studied whether an interaction between race/ethnicity (non-Hispanic white vs black, Hispanic, American Indian, and persons of other races/ethnicities) and type of eye care professional performing the initial LTP affected the hazard of undergoing additional LTPs.

Receipt of Incisional Glaucoma Surgical Procedures After LTP

Finally, we determined the proportion of patients receiving LTP by each type of eye care professional who subsequently underwent incisional glaucoma surgery (trabeculectomy or glaucoma drainage-device insertion) during the follow-up.

Results

A total of 1384 eyes of 891 eligible patients underwent 1 or more LTPs in Oklahoma during the study period. There were 1150 eyes that received LTP (83.1%) by an ophthalmologist and 234 eyes (16.9%) that had the procedure performed by an optometrist. A total of 493 patients (55.3%) underwent LTP at least once in both eyes. The number of LTPs performed by ophthalmologists ranged from 1 to 277 procedures; 57 ophthalmologists performed this procedure at least once. Optometrists each performed from 1 to 38 LTP procedures; 23 optometrists performed LTP at least once. The most common *ICD-9-CM* glaucoma diagnosis code listed on the date of the initial LTP was 365.11 (1206 [87.1%]) and was similar for both types of eye care professionals (975 [86.6%] of patients with an ophthalmologist-performed LTP and 231 [89.7%] with an optometrist-performed procedure). All enrollees in both groups were observed for up to 72 months. The median time from study eligibility to the first LTP was 28.8 months for patients first treated by ophthalmologists and 20.0 months for patients first treated by optometrists. The median times from the first LTP to the end of follow-up were 31.3 and 42.4 months, respectively. The mean (SD) age at the initial LTP was 77.7 (7.5) years for enrollees with ophthalmologist-performed LTP and 77.6 (8.0) years for those with optometrist-performed LTP ($P = .89$). The proportions of white, black, and other patients receiving LTP by ophthalmologists vs optometrists were 85.2% vs 75.5% ($P = .004$), 8.2% vs 10.8% ($P = .33$), and 6.5% vs 13.7% ($P = .004$), respectively (**Table 1**). Twenty-five enrollees (2.8%) received bilateral LTP on the same day.

Among the 1150 eyes undergoing LTP by an ophthalmologist, 174 (15.1%) received 1 or more LTPs on the same eye during the follow-up. Of the 234 eyes treated with LTP by optometrists, 84 (35.9%) underwent 1 or more additional LTPs on the same eye during follow-up ($P < .001$). **Figure 2** displays the distribution of time to second procedure. Second procedures within 6 months were much less common when the first procedure was performed by an ophthalmologist (3.9%) vs an optometrist (24.9%) ($P < .001$). The difference persisted with time, for example, 17.7% vs 34.3% at 3 years ($P < .001$).

We also studied the timing of the additional LTPs by the 2 eye care professional groups relative to the 10-day global period (ie, the immediate post-LTP period, when charges for normal postoperative care are included in the global surgical procedure fee). For patients first treated by ophthalmologists, no additional procedures occurred during the global period, and the probability of a subsequent LTP between 11 and 30 days was 1.1% (95% CI, 0.7%-1.9%). For patients first treated by optometrists, the probability of subsequent LTPs in the global period was 0.4% (95% CI, 0.1%-3.0%) and between days 11 and 30 was 10.3% (7.0%-15.0%).

For the 174 eyes that received LTP by ophthalmologists that required additional laser treatment, 155 (89.1%) received the subsequent LTP by the same ophthalmologist, 13 (7.5%) by a different ophthalmologist, and 6 (3.4%) by an optometrist. Among the 1150 eyes initially treated by ophthalmologists, 21 (1.8%) underwent 3 or more LTPs on the same eye. In comparison, for the 84 eyes that received LTP by optometrists that required additional LTPs, 73 (86.9%) received the subsequent LTP by the same optometrist, 5 (6.0%) by a different optometrist, and 6 (7.1%) by an ophthalmologist. Of the 234 eyes treated initially by optometrists, 11 (4.7%) underwent 3 or more LTPs on the same eye.

After adjustment for potential confounding factors, eyes that received LTP by optometrists had a 189% greater hazard for a subsequent LTP in the same eye during follow-up (hazard ratio, 2.89; 95% CI, 2.00-4.17; $P < .001$) compared with those undergoing LTP by an ophthalmologist. Female patients had a 43% increased hazard of undergoing a subsequent LTP in the same eye during follow-up (hazard ra-

Table 1. Demographics of Patients Receiving LTP by an Ophthalmologist or Optometrist

Characteristic	Overall	LTP Initially by an Ophthalmologist	LTP Initially by an Optometrist	*P* Value
Individuals, No.	891	752	139	
Eyes, No.	1384	1150	234	
Patient age, mean (SD), y	77.7 (7.6)	77.7 (7.5)	77.6 (8.0)	.89
Sex, No. (%)				
Male	345 (39)	294 (39)	51 (37)	.59
Female	546 (61)	458 (61)	88 (63)	
Race, No. (%)				
White	746 (84)	641 (85)	105 (76)	.02
Black	77 (9)	62 (8)	15 (11)	
Hispanic	7 (<1)	6 (<1)	1 (<1)	
Native	57 (6)	40 (5)	17 (12)	
Other	4 (<1)	3 (<1)	1 (<1)	
Year of first procedure, mean (SD)[a]	2010.3 (1.7)	2010.4 (1.7)	2009.9 (1.6)	.001
Year of first procedure, No. (%)				
2008	171 (19.2)	135 (18.0)	36 (26.0)	.04
2009	168 (18.9)	137 (18.2)	31 (22.3)	
2010	147 (16.5)	120 (16.0)	27 (19.4)	
2011	148 (16.6)	131 (17.4)	17 (12.2)	
2012	135 (15.2)	120 (16.0)	15 (10.8)	
2013	122 (13.7)	109 (14.4)	13 (9.4)	

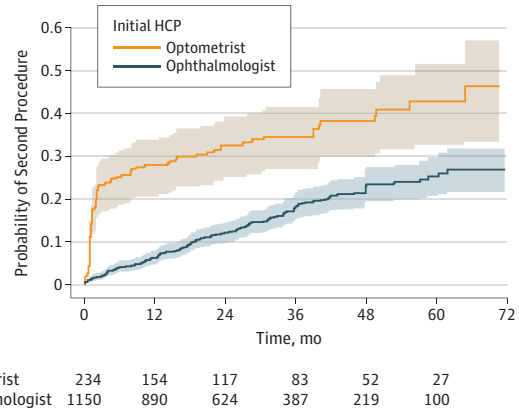
Abbreviation: LTP, laser trabeculoplasty.

[a] The average of the 1384 dates of the initial LTP.

tio, 1.43; 95% CI, 1.02-2.01; *P* = .04). There was no association between age (hazard ratio, 1.04 per 10 years; 95% CI, 0.84-1.28) at initial LTP (*P* = .72), between black, Hispanic, or American Indian individuals, and persons of other races/ethnicities vs white (*P* = .79; hazard ratio, 1.06; 95% CI, 0.71-1.57), or between large rural vs urban residence of the patient (*P* ≥ .15; hazard ratio, 0.75; 95% CI, 0.48-1.17) and between small rural vs urban residence of the patient (*P* ≥ .15; hazard ratio, 0.73; 95% CI, 0.48-1.12) and the hazard of additional LTPs (**Table 2**). The interaction model used to investigate whether race/ethnicity affected the hazard ratio of additional LTPs for ophthalmologist-performed vs optometrist-performed LTP was not statistically significant.

Among the 1150 eyes that underwent LTP by ophthalmologists, 49 (4.3%) subsequently underwent incisional glaucoma surgery. By comparison, of the 234 eyes that underwent LTP by an optometrist, 5 (2.1%) subsequently underwent such surgery.

Figure 2. Time to Second Laser Trabeculoplasty in Same Eye for Beneficiaries Receiving Initial Treatment by Ophthalmologists and Optometrists



Kaplan-Meier estimates of cumulative incidence for each group. Data are clustered because of some beneficiaries having both eyes studied. The study lasted 72 months: follow-up began at the first laser trabeculoplasty. Therefore, there was none at risk at month 72. HCP indicates health care professional.

Discussion

In this analysis of more than 1000 eyes of Medicare beneficiaries with glaucoma who underwent LTP in Oklahoma from January 1, 2008, through December 31, 2013, we note substantial differences in the receipt of additional LTPs by patients who underwent the procedure by an ophthalmologist compared with an optometrist. After adjustment for demographic and other factors, patients who underwent LTP by an optometrist had an approximate 2-fold higher likelihood of undergoing additional LTPs in the same eye compared with others who received this procedure by an ophthalmologist. Most additional LTPs performed by optometrists were done soon after the initial procedure and were performed by the same optometrist as the initial LTP.

Although this study highlights major differences in outcomes of patients undergoing subsequent LTPs after the initial procedure performed by ophthalmologists and procedures performed by optometrists, it is difficult with claims data to discern the reasons for the differences observed. Possible

Table 2. Factors Affecting the Hazard of Requiring Additional Laser Trabeculoplasty[a]

Factor	Model	Hazard Ratio (95% CI)[b]	*P* Value
Initial LTP by an OD vs initial LTP by an EyeMD	Crude	2.58 (1.84-3.61)	<.001
Initial LTP by an OD vs initial LTP by an EyeMD	Adjusted	2.89 (2.00-4.17)	<.001
Each year later LTP was initially performed (eg, 2013 vs 2012)	Adjusted	1.03 (0.92-1.16)	.57
Female vs male	Adjusted	1.43 (1.02-2.01)	.04
Other races vs white	Adjusted	1.06 (0.71-1.57)	.79
Each additional decade of age	Adjusted	1.04 (0.84-1.28)	.72
Large rural town vs urban	Adjusted	0.75 (0.48-1.17)	.20
Small rural town vs urban	Adjusted	0.73 (0.48-1.12)	.15

Abbreviations: EyeMD, ophthalmologist; LTP, laser trabeculoplasty; OD, optometrist.

[a] The adjusted model included all of the covariates listed in the table: whether the LTP was performed by an optometrist (vs an ophthalmologist), calendar year the LTP was performed, sex, race/ethnicity, age, and patient residence. The interpretation of the calendar year of the initial LTP is as follows: Persons who underwent their initial LTP in 2013 had a 3.4% increased hazard of requiring additional LTPs compared with those who had their initial LTP in 2012. This difference was not statistically significant. SEs were adjusted for clustering because of some beneficiaries having both eyes studied. *P* values and 95% CIs are from robust Wald procedures.

[b] Hazard ratios are calculated from crude and adjusted proportional hazards regression models for time to event (second procedure in same eye).

explanations include differences in the sociodemographic characteristics of ophthalmologists' vs optometrists' patients and how each group responds to LTP, differences in disease severity between the 2 groups, differences in selection of patients who are appropriate candidates for LTP between the 2 types of eye care professionals, and differences in how the LTP was performed, including the type of laser used, laser settings, amount of the drainage angle treated in one setting, or whether the procedure was performed properly. Unfortunately, without access to clinical data, such as the preoperative and postoperative intraocular pressure levels, gonioscopy findings, and records describing how the procedures were performed, it is impossible to identify which of these or other factors are contributing to the observed differences in receipt of subsequent LTPs between the groups.

Another possible explanation for differences observed may be that ophthalmologists can perform incisional surgery on patients with failed LTP, whereas optometrists, who cannot do so, may perform additional LTPs. Likewise, because incisional glaucoma surgery is reimbursed more than LTP, this could influence decision making. However, we doubt that this factor is contributing much to the differences observed because a subset of ophthalmologists routinely performs incisional glaucoma surgery, whereas most eye care professionals (optometrists and comprehensive ophthalmologists) would refer patients to glaucoma subspecialists for surgery and thus not benefit financially from recommending incisional surgery vs additional LTPs. Furthermore, few patients in both groups underwent incisional glaucoma surgery during the follow-up; therefore, it is unlikely that this is a major factor responsible for the differences in additional LTPs between the 2 groups.

Some of the patients undergoing LTP by optometrists may reside in communities where access to incisional glaucoma surgery is limited, which may explain some of the differences. Moreover, despite the fact that all the patients in this analysis had Medicare, patients of ophthalmologists may have been better able to make the copayments of incisional glaucoma surgery compared with those receiving care by optometrists. Additional research is needed to study these various potential explanations.

The success of LTP depends on various patient-related and health care professional-related factors. Laser trabeculoplasty has been most effective in patients with primary open-angle glaucoma, exfoliation glaucoma, and pigmentary glaucoma.[16-18] Other glaucoma types, such as angle-closure and angle-recession glaucoma, usually respond poorly to LTP. The degree of angle pigmentation can also affect the success of the procedure and risk for intraocular pressure increases after LTP.[19,20] Experience and expertise of the eye care professional can also affect outcomes because the effectiveness of LTP requires proper identification of the angle structures to treat. Although, to our knowledge, this is the first study that directly compared LTP performed by ophthalmologists vs optometrists, Lowry et al[21] showed that LTP performed by attending ophthalmologists was more effective than procedures performed by resident physicians, suggesting that experience in performing the procedure is important.

An interesting finding from these analyses is that many of the patients who underwent additional LTPs by optometrists did so soon after the initial LTP, whereas additional LTPs among patients treated by ophthalmologists tended to occur much later after the initial procedure. One can speculate the reasons for the differences observed. One possibility is that the optometrists performing this procedure may have been more cautious, scheduling the procedure into 2 or more sessions to try to limit postoperative inflammation or intraocular pressure increases.[22,23] Alternatively, to maximize reimbursement, some optometrists may schedule LTP into more than 1 session, with the timing of subsequent LTPs after the 10-day global period of the initial procedure. The large increase in additional LTPs for the patients undergoing the procedure by optometrists immediately after the global period suggests that this may be a contributing factor, although we are unaware of any reports indicating that optometrists systematically practice in this manner. A third possibility is that because the pres-

sure-decreasing effect of LTP may take several weeks to months to occur, ophthalmologists may be more aware that it may take some time to observe the effect of the initial LTP before proceeding with additional LTPs. However, we know of no studies directly comparing the knowledge level about LTP of these 2 eye care professional groups. With claims data, we cannot tell whether any of these or other factors are responsible for the differences in performance of subsequent LTPs immediately after the global period.

Several studies have assessed the outcomes of additional LTPs.[24] Feldman et al[25] found a 35% success rate at 6 months with additional argon LTPs, which decreases to 11% after 24 months. Starita et al[26] reported that 18% of patients who underwent additional argon LTPs had an intraocular pressure increase of more than 10 mm Hg. As a result, authorities often discourage the performance of additional argon LTPs. The success of additional selective LTPs has been more promising. Hong et al[27] described additional intraocular pressure reduction after additional selective LTPs. Durr and Harasymowycz[28] did as well. Others have shown that selective LTP can decrease intraocular pressure in eyes that have undergone argon LTP previously.[29] Unfortunately, our data source lacks details regarding the amount of the angle treated and the type of laser used during the initial procedure to assess whether the subsequent LTPs performed by eye care professionals in both groups are consistent with recommended clinical practice guidelines.

To our knowledge, this is the first study to examine differences in outcomes of LTP between patients receiving care by ophthalmologists and those by optometrists. A strength of this study is its large diverse population of patients with glaucoma enrolled in Medicare throughout Oklahoma. We are not only including patients receiving care at one particular academic institution or by a small group of eye care professionals but are also including patients who underwent LTP performed by 57 ophthalmologists and 23 optometrists. We had longitudinal follow-up for several years after the initial LTP to compare the longer-term outcomes. Finally, the data come from claims submitted by ophthalmologists and optometrists, and not from patient self-report, which may be less reliable.[30]

Our study has several limitations. First, claims data lack clinical details, such as intraocular pressure levels before or after LTP, slitlamp and gonioscopy findings, or details of how the procedures were performed. Second, our study focused on Medicare beneficiaries. It is unclear whether the findings would be similar for younger patients or those with other forms of health insurance. Third, there may be systematic differences between the patients receiving care by ophthalmologists and those by optometrists, including differences in disease severity between the groups. Unfortunately, there were not enough eyes that were coded with the new glaucoma severity codes to assess for this difference. One would expect that patients with more severe glaucoma would be receiving their care by ophthalmologists and thus would be more, not less, likely to require additional LTPs. Although we adjusted our models for some confounding factors, including age and race/ethnicity, there are other unmeasured confounders not included in claims data.

Conclusions

Based on the findings of these analyses, we urge state legislatures and health policy makers to be cautious about giving optometrists privileges to perform LTP in other states until additional research is performed to better delineate the reasons for the differences in the use of additional LTP we are observing in Oklahoma. Furthermore, researchers should determine the effect that these differences have on costs of care and, most important, on clinical outcomes such as disease progression.

ARTICLE INFORMATION

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Acquisition, analysis, or interpretation of data: All authors.
Drafting of the manuscript: Stein, Zhao.
Critical revision of the manuscript for important intellectual content: Zhao, Andrews, Skuta.
Statistical analysis: Andrews.
Administrative, technical, or material support: Stein.
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New Hampshire Society of Eye Physicians & Surgeons

House Bill 349 Will Allow Optometrists to Perform Laser Eye Surgery

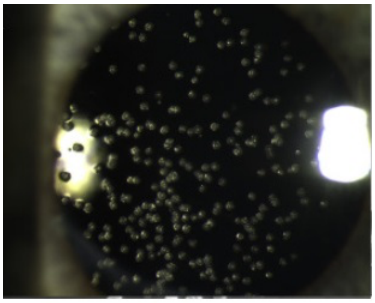
No Surgery is Simple and Routine

Despite claims otherwise, the language in HB 349 will authorize optometrists, who are not medical doctors or trained surgeons, to perform three specific types of delicate eye surgeries on the eye using lasers YAG capsulotomy, Laser Peripheral Iridotomy (LPI), Select Laser Trabeculoplasty (SLT). These surgeries are not "minor procedures" and if done improperly can have serious repercussions to a patient's vision and health.

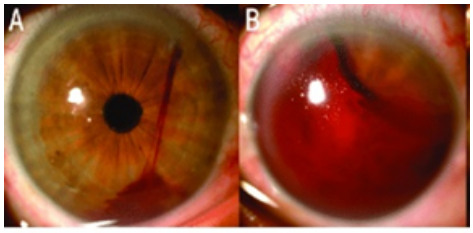
Potential Consequences of improper surgery without proper education and training:

- Misdiagnosis of eye disease can lead to unnecessary or additional surgery.
- Delay to obtaining correct treatment from an ophthalmoloist (MD).
- Severe harm to the eye and possible vision loss.

The Laser Surgeries in HB 349 and What Could Go Wrong?



Lens pitting from YAG

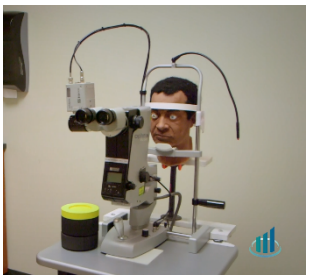


Bleeding resulting from a LPI

LASER SURGERY	COMPLICATION
YAG capsulotomy – Often needed after cataract surgery to remove a cloudy layer or scar tissue that develops after the surgery. A YAG is a laser used to make an opening in the cloudy capsule to allow light to pass through again.	YAG capsulotomy can result in damage to the lens implant, requiring the full replacement of the newly implanted replacement lens in a procedure far more complex than the original surgery.
LPI – Uses a laser to create a tiny opening in the iris (the colored part of the eye) to help widen the pathway to the drain of the eye and reduce pressure to treat glaucoma. Becoming phased out as standard of care.	LPI can include worsening high pressure, inflammation, bleeding blurred vision, haloes, glare, and double vision. Performing this would delay surgical referral to an ophthalmologist, which could lead to permanent vision loss.
SLT – Uses lasers applied to the drainage tissue in the eye to start a chemical and biological change in the tissue to improve drainage of fluid through the drain and out of the eye for reducing pressure for primary open-angle glaucoma.	Laser Trabeculoplasty can result in abnormal accumulation of fluid in the eye, burns and scaring. If perfromed in secondary glacuomas, can actually worsen the condition.

Lasers are surgical instruments that cut as deeply and sharply as any scalpel. It is easy to make the cut. It requires extensive education and training to choose the right procedure for your patient and to address complications once they're made.

Optometry school is not a substitute for medical school, and a 32 hour-course cannot possibly compare to the three-year residency an ophthalmologist completes to gain clinical experience, especially when handling immediate complications that can arise.



House Bill 349 is too great a risk for New Hampshire's patients!

New Hampshire Society of Eye Physicians & Surgeons

HB349 is A Bad Dose of Medicine for New Hampshire's Patients

"No" to Lowering Safety Standards for Laser Eye Surgery

"The optometrist told me the laser surgery would be simple, quick, and painless. Instead, my life has forever been changed." – Vicki Rutledge, Oklahoma patient blinded by optometrist performing YAG capsulotomy laser surgery.

Allowing optometrists, who lack essential medical and surgical training, to perform laser eye surgery jeopardizes patient safety. Here's why:

Insufficient Training: Optometrists Aren't Medical Doctors

- Ophthalmologists complete four years of medical school followed by a minimum of four years in residency specializing in medical and surgical eye care.
- Optometrists complete only a four-year optometry program with minimal surgical training.
- This stark difference in training depth is critical for ensuring patient safety.

Inadequate Education: Optometry Schools Lack Surgical Training

- Optometry schools do not provide comprehensive surgical education like medical schools.
- Medical school curriculums include extensive surgical training and patient management.
- The absence of standardized national standards and varied curricula for surgical education in optometry schools exacerbates training inconsistencies and risks patient safety.

Limited Practical Experience: A Critical Gap

- Approximately 95% of optometry students are trained in states where laser eye surgery by optometrists is illegal. 97.9% of optometric residency slots do not include laser training.
- These students lack hands-on experience with live patients and rely on models and props.
- Real surgical training involves handling live tissues, managing unexpected complications, and understanding patient-specific variations—skills acquired through simulated practice.

Comprehensive Training Matters: Ensuring Patient Safety

- Eye surgery demands technical proficiency, in-depth medical knowledge, diagnostic skills, and clinical judgment.
- Ophthalmologists are extensively trained to assess patient suitability for surgery, manage potential complications, and provide comprehensive postoperative care.
- This holistic approach ensures patient safety and optimal outcomes, which cannot be guaranteed without thorough and prolonged medical education and surgical training.

No Improvement in Access to Surgical Eye Care

- Nearly 90.4% of New Hampshire's population is within a 30-minute drive to an ophthalmologist.
- A 2023 study published in a major medical journal found no statistically significant increase in access to laser eye surgery in states where optometrists are allowed to perform laser surgery.
- Without demonstrated need or demand from the public, altering safety standards and expanding the scope of practice for optometrists is unwarranted and potentially harmful.

Lowering safety standards for laser eye surgery is not just risky—it's bad medicine.