

LESSONS IN NONSURGICAL GLAUCOMA MANAGEMENT



Should SLT be performed as the initial treatment for glaucoma and ocular hypertension?

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LASER IN GLAUCOMA AND OCULAR HYPERTENSION (LIGHT) TRIAL: SIX-YEAR RESULTS OF PRIMARY SELECTIVE LASER TRABECULOPLASTY VERSUS EYE DROPS FOR THE TREATMENT OF GLAUCOMA AND OCULAR HYPERTENSION

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Industry support: Four of the authors disclosed relationships with/support from industry. Complete information is available at bit.ly/3Z34nh1.

ABSTRACT SUMMARY

The Laser in Glaucoma and Ocular Hypertension (LIGHT) trial compared the effectiveness of initial treatment with selective laser trabeculoplasty (SLT) versus IOP-lowering eye drops for open-angle glaucoma (OAG) and ocular hypertension (OHT). This extension of the prospective, randomized controlled trial included 633 patients who were randomly assigned to initial 360° SLT or IOP-lowering eye drops and completed the initial 3-year study. During the extension phase, patients in the SLT arm were permitted a third SLT treatment if necessary, and those in the medication arm were allowed to undergo SLT as a treatment switch or escalation. A total of 524 patients (73% of those initially assigned randomly) completed the 3-year trial extension.

The primary outcome measure was health-related quality of life based on the EuroQol 5 Dimensions 5 Level (EQ-5D-5L) utility scores. Secondary

STUDY IN BRIEF

- ▶ A prospective, randomized controlled trial compared the effectiveness of initial treatment with selective laser trabeculoplasty (SLT) versus IOP-lowering eye drops for open-angle glaucoma and ocular hypertension. This extension of the earlier 3-year Laser in Glaucoma and Ocular Hypertension (LIGHT) trial confirmed that, compared to eye drops, SLT was a safe and effective initial treatment for glaucoma that reduced both the rate of disease progression and patients' need for glaucoma and cataract surgery over 6 years.

WHY IT MATTERS

SLT and topical drops are both recommended for the treatment of glaucoma and reduction of IOP. The 6-year LIGHT trial results, however, provide compelling evidence that SLT rather than IOP-lowering eye drops should be the initial treatment for eligible patients newly diagnosed with ocular hypertension or open-angle glaucoma.

outcomes were glaucoma-related measures using the Glaucoma Utility Index, Glaucoma Symptom Scale, and Glaucoma Quality of Life-15 questionnaires; clinical effectiveness; and safety of the treatment arms. Disease definition and treatment were based on optic disc analysis with the Heidelberg Retina Tomograph (Heidelberg Engineering), automated visual field (VF) assessment with the Humphrey Field Analyzer II (Carl Zeiss Meditec) using the Swedish interactive algorithm standard 24-2 strategy, and IOP measurements. Eye-specific target IOPs were based on the Canadian Target IOP Workshop and stratified according to disease severity (ie, OHT and mild, moderate, or severe OAG). Disease progression was determined by glaucoma progression analysis with web-based decision support

software and verified by an ophthalmologist. Target IOP was reduced by 20% if deterioration was identified despite a measured IOP that was at or below target. Target IOP was raised to the mean of the past three visits if the IOP was 2 to 3 mm Hg above the target and the disease was stable on at least four VF examinations.

At 6 years, no significant differences were found in health-related quality of life between the groups. IOP was at or below target in 69.8% of SLT eyes without the need for IOP-lowering eye drops. In contrast, 18% of eyes in the medication group achieved the same level of control without eye drops, 79.5% had switched to SLT, and 20.5% had undergone cataract surgery alone or with SLT. Eyes initially treated with SLT experienced reduced disease

progression compared to those initially treated with IOP-lowering eye drops (19.6% vs 26.8%, respectively; $P = .006$) despite higher IOPs at 72 months (16.3 vs 15.4 mm Hg, respectively; $P < .001$). The SLT group underwent fewer trabeculectomies than the medication group (13 vs 32, respectively; $P < .001$) and fewer cataract surgeries (57 vs 95, respectively; $P = .03$).

Serious adverse events were similar in both groups. There were no sight-threatening complications in the SLT group.

DISCUSSION

Which initial treatment was better?

The LIGHT study extension demonstrated greater safety and long-term benefits—a reduced need for incisional glaucoma or cataract surgery, greater drop-free IOP control, and a lower risk of glaucomatous progression—with SLT compared to IOP-lowering drops. One reason for these differences may be that eye drops must be applied daily and work only if used correctly. IOP control with topical medication may therefore wane and result in greater variations between doses or at night when IOP is at its

highest. Additionally, despite their best efforts, patients may have difficulty getting drops into their eyes. SLT, in contrast, does not rely on cyclical IOP lowering, and it reduces mean diurnal IOP and IOP fluctuations.^{2,3}

Whether drug-eluting implants are comparable to SLT for the management of glaucoma has yet to be determined.

What does the current study add to the 3-year study?

After the original 3-year LIGHT trial was published,⁴ the AAO listed SLT as an initial treatment for OAG and OHT alongside medical management, and the UK National Institute for Health and Care Excellence recommended SLT as a first-line treatment.^{5,6} The extension study confirmed that SLT is a safe and effective first-line treatment that can significantly reduce disease progression and the need for incisional glaucoma or cataract surgery. To achieve drop- and surgery-free target IOPs at 72 months, most patients (90%) in the SLT arm received only one or two SLT treatments. At 3 years, no eye in the SLT group had required surgery to lower IOP. At 6 years, however, 13 eyes in the SLT group had required glaucoma

surgery. Patients should therefore be monitored for disease progression after initial SLT treatment.

What are the limitations of the study? Are there additional considerations?

It may not be possible to generalize the study's results to a more diverse population.

In the medication and SLT groups, 72.2% and 67.6% of patients were White, respectively, and 17.8% and 21.4% were Black, respectively. The study also excluded patients with mean deviation VF loss greater than -12 dB in the healthier eye or -15 dB in the worse eye because these patients would likely need incisional glaucoma surgery.

Given that the median IOPs were 26 and 23 mm Hg in the OHT and OAG eyes, respectively, the study results are not directly applicable to patients with normal-tension glaucoma.

Lastly, during the 3-year extension phase, MIGS was performed on 11 eyes of six patients initially treated with eye drops and none of the eyes initially treated with SLT. The difference in the need for trabeculectomy between the groups might therefore have been greater.

GLAUCOMA MEDICATION ADHERENCE 1 YEAR AFTER THE SUPPORT, EDUCATE, EMPOWER PERSONALIZED GLAUCOMA COACHING PROGRAM

Killeen OJ, Niziol LM, Cho J, et al⁷

Industry support: D.M., Board member for clinical trials (Glaukos, Santen); P.L., Shares (GSK, Health Solutions, Medco, Merck, Pfizer)

ABSTRACT SUMMARY

An uncontrolled intervention study with a pre-post design evaluated the effect of the Support, Educate, Empower (SEE) glaucoma coaching program on the medication adherence of previously poorly adherent patients. Their administration of medication was

monitored electronically (AdhereTech) during the 7-month SEE program and the 12 months following its conclusion. There was no contact between the study team and the participants during the follow-up period.

Of the 48 participants who finished the SEE program, 39 completed the 12 months of monitoring after its conclusion. The SEE cohort included patients who were 40 years of age or older, were administering at least one glaucoma medication, and reported poor adherence. The main outcome measure was a change in medication adherence during the 12 months following the SEE program's conclusion.

The mean adherence rate after completion of the program was 81.3%, which was significantly higher than

the baseline adherence rate of 59.9%. At the end of the 12-month follow-up period, the mean adherence rate was 66.5%, significantly lower than the mean adherence rate during the program ($P < .0001$) but significantly higher than the baseline adherence rate ($P = .0393$). The greatest losses occurred at 1 and 4 months after completion of the SEE program.

DISCUSSION

What do we know about patient adherence?

Reported rates of nonadherence among patients who have received a prescription for topical glaucoma medication range from 30% to 80%.^{8,9} Increasing the number of glaucoma medications a patient is to administer

STUDY IN BRIEF

- An extension of an intervention study assessed medication adherence in patients with glaucoma during their participation in a 7-month glaucoma coaching program and the 12 months after its conclusion. Mean adherence decreased significantly after the program ended, suggesting that intermittent reinforcement may be necessary to maintain long-term benefits.

WHY IT MATTERS

Medication adherence is critical to the success of glaucoma management. Coaching programs can improve adherence, but the level of benefit decreases after the program ends. When resources to reinforce behavior are unavailable, selective laser trabeculoplasty may be an effective alternative that reduces or eliminates patient adherence as a variable in the management of their glaucoma.

may reduce adherence.¹⁰ Patients who, on questioning, reported missing medications at more than two-thirds of office visits showed a mean deviation VF loss of 2.23 dB over 8 years in the Collaborative Initial Glaucoma Treatment Study (CIGTS).^{11,12} Promoting medication adherence is therefore integral to reducing disease progression.

Coaching can improve patient adherence. In the study by Killeen et al, the benefit decreased but remained significant after coaching stopped.⁷ It is unclear whether an improvement in medication adherence can be maintained beyond 1 year, can be improved with reinforcement, or is sufficient to reduce disease progression. Trials in diabetes management have suggested that reinforcement can improve adherence¹³; studies to determine the translatability of this research to glaucoma management and frequency are necessary.

What are some important considerations in the study?

This interventional study lacked a control group for the comparison of adherence rates. In addition, the participants identified themselves as nonadherent, raising the possibility of selection bias and the issue of generalizability.

During the 12-month follow-up period, 18 (46%) of the 39 participants were censored, 12 of them because their original adherence monitor became inactive. Notably, the AdhereTech

electronic medication adherence monitor used in the study was not previously validated. According to the study design, moreover, there was no follow-up to determine why the monitors became inactive. The lack of contact between participants and the study team also meant there were no reports of clinical effectiveness or frequency of office visits during which they might have discussed medication adherence with an ophthalmologist.

How could the study change glaucoma management?

The optimal frequency, dose, and method for interventions to improve adherence likely require an evaluation of individual patient factors and customization to each person's specific needs. It is essential to identify patients whose medication adherence is poor and who could benefit from intervention. Motivational interviewing techniques, phone calls with counselors, and automated medication reminders can improve adherence. Dedicating resources to implementing and maintaining these practices may benefit patients. Health insurance reimbursement to support such programs could increase uptake by clinical practices. That said, given the research demonstrating the benefits of SLT compared to eye drops,¹ the cost-effectiveness of SLT for treating nonadherent patients also merits consideration. ■

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