

UPDATES ON SELECTIVE LASER TRABECULOPLASTY



Researchers studied this modality as an initial treatment for open-angle glaucoma and ocular hypertension and evaluated the procedure's repeatability.

BY AHMADREZA MORADI, MD, AND JASON BACHARACH, MD

SELECTIVE LASER TRABECULOPLASTY VERSUS TOPICAL MEDICATION AS INITIAL GLAUCOMA TREATMENT: THE GLAUCOMA INITIAL TREATMENT STUDY RANDOMIZED CLINICAL TRIAL

Ang GS, Fenwick EK, Constantinou M, et al¹
Industry support: None

ABSTRACT SUMMARY

In an international, longitudinal, multicenter controlled trial, investigators randomly assigned 167 treatment-naïve patients with mild to moderate primary open-angle glaucoma (POAG) or exfoliation glaucoma to receive selective laser trabeculoplasty (SLT, $n = 83$) or topical medical therapy ($n = 84$). The primary outcome was glaucoma-specific quality of life (QOL), which was measured using the Glaucoma Outcomes Assessment Tool. Secondary outcomes included the rate of successful IOP reduction (defined as more than a 25% reduction from baseline) and the presence of ocular surface disease, including conjunctival hyperemia and eyelid erythema, at months 12 and 24.

At month 24, the rate of successful IOP reduction was 18.6% (95% confidence interval [CI], 3.0%–34.3%,

STUDY IN BRIEF

- An international, longitudinal, multicenter, randomized controlled trial found no evidence that selective laser trabeculoplasty (SLT) is superior to medication for improving glaucoma-specific quality of life (QOL).

WHY IT MATTERS

A growing body of research attests to SLT's suitability, efficacy, and repeatability as a first-line treatment for IOP reduction. Few studies to date, however, have compared the impact of first-line treatment with topical medications or SLT on patients' QOL. This trial with sensitive, glaucoma-specific, and holistic QOL outcome measures was designed to evaluate the effectiveness of SLT and topical medication on glaucoma-related QOL, health-related QOL, the rate of IOP success, and the presence of ocular surface disease at 12 and 24 months.

$P = .022$) higher (absolute difference) in the medication group compared to the SLT group. SLT patients, however, reported a greater between-group improvement in social well-being compared to medicated patients. More individuals in the medication group had conjunctival hyperemia and eyelid erythema compared to the SLT group.

DISCUSSION

What are the practical findings of this study?

Topical medications (eye drops) are often the first line of treatment for glaucoma, but the burden of this

approach on patients can be significant in terms of cost and side effects. Few studies to date have compared the impact of first-line treatment with topical medications or SLT on patients' glaucoma-specific QOL. The results of this study did not support the investigators' hypothesis that patients undergoing SLT would report a better QOL at follow-up than those in the medication group. Patient-centered outcomes were largely comparable in both treatment arms, but medical therapy appeared to achieve the target IOP more efficaciously than SLT in this patient population.

EFFICACY OF REPEAT SELECTIVE LASER TRABECULOPLASTY IN MEDICATION-NAÏVE OPEN-ANGLE GLAUCOMA AND OCULAR HYPERTENSION DURING THE LIGHT TRIAL

Garg A, Vickerstaff V, Nathwani N, et al²
Industry support: None

ABSTRACT SUMMARY

Researchers performed a post hoc

analysis of the SLT treatment arm of a multicenter, prospective, randomized controlled trial to determine the efficacy of repeat SLT in medication-naïve patients with POAG and ocular

hypertension (OHT) who required repeat treatment (within 18 months) for early to medium-term treatment failure. The reduction in IOP at 2 months after the initial SLT procedure and the duration of effect after initial and repeat SLT were the main outcome measures in this study. After SLT at baseline, investigators observed the patients for a minimum of 18 months after a second SLT procedure.

A total of 115 eyes of 90 patients underwent repeat SLT during the first 18 months of the trial. The IOP before the initial SLT procedure was significantly higher than the IOP before the repeat SLT procedure (mean difference, 3.4 mm Hg; 95% CI, 2.6–4.3 mm Hg; $P < .001$). The absolute IOP reduction was greater at 2 months after the initial SLT procedure than at 2 months after repeat SLT (mean difference, 1.0 mm Hg; 95% CI, 0.2–1.8 mm Hg; $P = .02$). The adjusted absolute IOP reduction (adjusting for IOP before initial or repeat SLT) was greater at 2 months after repeat SLT (adjusted mean difference, -1.1 mm Hg, 95% CI, -1.7 to -0.5 mm Hg; $P = .001$).

Treatment failed early (retreatment 2 months after the initial SLT procedure) in 34 eyes, and it failed later (retreatment more than 2 months after the initial SLT procedure) in 81 eyes. No significant

difference in early absolute IOP reduction at 2 months after repeat SLT was noted between early and later failures (mean difference, 0.3 mm Hg; 95% CI, -1.1 to 1.8 mm Hg; $P = .655$). Repeat SLT maintained drop-free IOP control in 67% of 115 eyes at 18 months with no clinically relevant adverse events.

The investigators conclude that repeat SLT can maintain IOP at or below the target in medication-naïve eyes with POAG and OHT that require retreatment and that the duration of effect is at least equivalent to that of the initial SLT procedure.

DISCUSSION

Is SLT an appropriate first-line treatment in medication-naïve patients when the IOP-lowering effect of initial SLT wanes?

SLT is an increasingly well-established method of lowering IOP in patients with POAG and OHT, but its IOP-lowering effect decreases over time. The efficacy of SLT when used as a repeat treatment in truly medication-naïve patients with POAG or OHT remains unclear.

In this analysis, mean IOP was clinically and statistically significantly lower at 2 months after both initial and repeat SLT compared to the corresponding pretreatment IOPs ($P < .001$). These findings show that repeat SLT is an effective means of achieving IOP control

in POAG and OHT eyes requiring retreatment within 18 months of the initial SLT procedure.

How did the effects of initial and repeat SLT compare?

Although SLT would be said to have failed in eyes requiring lower target IOPs in this study, SLT contributed to lowering IOPs. After repeat SLT, the cumulative effect of the initial and repeat SLT procedures might have provided an equivalent or possibly longer duration of clinical benefit compared to a single SLT procedure. Repeat SLT was safe, with minimal laser-related side effects seen during the Laser in Glaucoma and Ocular Hypertension (LIGHT) trial. ■

1. Ang GS, Fenwick EK, Constantinou M, et al. Selective laser trabeculoplasty versus topical medication as initial glaucoma treatment: the Glaucoma Initial Treatment Study Randomised Clinical Trial. *Br J Ophthalmol*. 2020;104(6):813–821.
2. Garg A, Vickerstaff V, Nathwani N, et al. Efficacy of repeat selective laser trabeculoplasty in medication-naïve open-angle glaucoma and ocular hypertension during the LIGHT Trial. *Ophthalmology*. 2020;127(4):467–476.

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STUDY IN BRIEF

- In a post hoc analysis of the selective laser trabeculoplasty (SLT) treatment arm of the Laser in Glaucoma and Ocular Hypertension (LIGHT) trial, repeat SLT maintained IOP at or below the target in medication-naïve eyes with primary open-angle glaucoma (POAG) and ocular hypertension (OHT) that required retreatment. The duration of effect was at least equivalent with initial and repeat SLT.

WHY IT MATTERS

The main results of the LIGHT trial showed that primary SLT was more cost-effective than initial medical therapy over 3 years, whereas health-related quality of life at 36 months was equivalent between the two treatment arms. Although SLT is an increasingly well-established method of reducing IOP in eyes with POAG and OHT, the efficacy of repeat SLT is unclear when used as a repeat treatment in truly medication-naïve patients with POAG or OHT.