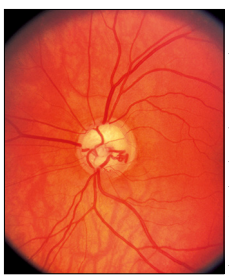
Laser trabeculoplasty as first-line glaucoma treatment



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The efficacy of laser trabeculoplasty as treatment for open-angle glaucoma is established.[1,2] The role of laser trabeculoplasty as first-line treatment was first reported in 1990: the Glaucoma Laser Trial[3] showed that in patients with newly diagnosed primary open-angle glaucoma, argon laser trabeculoplasty was an effective and safe first-line therapy compared to topical timolol. Selective laser trabeculoplasty, which has the advantage of causing less target tissue disruption, superseded argon laser trabeculoplasty as the laser treatment of choice.[4] Randomised trials compared selective laser trabeculoplasty and latanoprost,[5] and established selective laser trabeculoplasty as a safe and effective first-line treatment. Physicians' habits die hard, and the simplistic algorithm of giving drops first, then laser, then surgery is engrained in practice and teaching.

LiGHT was a multicentre trial sponsored by the National Institute for Health Research comparing selective laser trabeculoplasty to medicine in newly diagnosed patients with ocular hypertension and open-angle glaucoma, reported in *The Lancet* by Gus Gazzard and colleagues.[6] 718 patients were randomly assigned to receive either selective laser trabeculoplasty first or topical medicine first. The trial showed that health-related quality-of-life and other disease-specific quality-of-life outcomes did not differ between treatment groups. The primary outcome, average EQ-5D score, was 0·89 (SD 0·18) in the selective laser trabeculoplasty group versus 0·90 (SD 0·16) in the eye drops group (difference 0·01, 95% CI –0·01 to 0·03; p=0·23). However, secondary outcomes including cost-effectiveness, clinical effectiveness, and safety favoured the group who received selective laser trabeculoplasty first. Within the UK health-care system, the 3-year cost savings were impressive: each patient who received selective laser trabeculoplasty first could save the equivalent of five ophthalmology specialist appointments.

The strength of this work lies in its methods. The authors generated target intraocular pressures for each patient based on internationally recognised guidelines[7,8] and used these targets to monitor efficacy. Decision-tree algorithms escalated treatment when pressures were beyond the target in a manner that resembles how contemporary glaucoma specialists treat their patients. It may be argued that this target is complex and arbitrary, reducing the generalisability of the trial's results. However, many glaucoma trials measured the percentage of patients achieving a given intraocular pressure or a percentage decrease, which is easier to apply, but is also arbitrary and probably too simplistic. Indeed, LiGHT's methodology might become a rubric for future glaucoma trials.

Some details of the study are noteworthy. First, the overall effectiveness of selective laser trabeculoplasty in this trial seemed greater than in previous trials. At the end of 3 years, 21·8% of patients treated with selective laser trabeculoplasty required additional medications, whereas previous trials showed that after approximately 1 year 20–30% of patients required additional therapy.[5,9] This difference might arise from LiGHT's use of individualised target pressures, which could adjust target pressures upward if there is no confirmed worsening for a particular patient. The frequency of this upward adjustment and the absolute reduction in intraocular pressure thanks to selective laser trabeculoplasty was not reported and is a limitation; the authors say that will provide these details in future papers. LiGHT included patients with ocular hypertension, while other studies of selective laser trabeculoplasty focused on patients with open-angle glaucoma. Selective laser trabeculoplasty may be more effective for ocular hypertension, or seem to be more effective, especially when effectiveness depends on potentially upwardly mobile target pressures. Potential long-term negative effects of selective laser trabeculoplasty on trabecular meshwork function are of course impossible to determine in such a trial.

Finally, there might be unintended consequences of treating patients with selective laser trabeculoplasty and following them up off medication. Not taking medications is one reason for patient non-attendance to chronic disease clinics.[10] Medication refills often remind patients to attend important follow-up examinations. From a practical standpoint, an ophthalmologist will need to gauge a patient's reliability prior to recommending medication versus selective laser trabeculoplasty. A mandate of selective laser trabeculoplasty first for short-term economic gain may lead to worse outcomes in patients whose understanding of their glaucoma is limited, or because of unforeseen, untoward long-term effects.

Overall, LiGHT was a well designed trial that demonstrates selective laser trabeculoplasty's acceptable safety and efficacy. Based on UK standards, the 3-year cost savings for giving selective laser trabeculoplasty first appear to be substantial. In the USA, where the price of medications is higher than in some single-payer systems, the cost savings might be even greater. In an ageing population, as glaucoma is becoming more prevalent and medical costs are escalating, the LiGHT trial provides evidentiary support for ophthalmologists to consider selective laser trabeculoplasty as first-line treatment for ocular hypertension and open-angle glaucoma.

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We declare no competing interests.

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