Impact of Video Education on Patient Knowledge, Anxiety, and Satisfaction in Selective Laser Trabeculoplasty: A Pilot Study

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Précis: In patients undergoing selective laser trabeculoplasty, preoperative video education did not improve patient knowledge regarding the procedure, decrease anxiety, or increase satisfaction, as these metrics were already favorable across all patients in this study.

Purpose: To assess the effect of an educational video on patient knowledge, anxiety, and satisfaction at a selective laser trabeculoplasty (SLT) procedure visit.

Materials and Methods: This is a prospective, randomized trial. Patients at a single academic medical center completed a survey at their procedure visit for SLT; patients were randomized to view an educational video or no video before survey administration. Knowledge was assessed with a 10-item questionnaire. The 6-item State-Trait Anxiety Inventory scale (STAI-6) assessed anxiety (score > 40 defined significant anxiety). Perceptions of visit quality were assessed using a Likert scale.

Results: Twenty-two patients were randomized into video (n = 11) and control (n = 11) groups. No difference in knowledge was observed between groups (83.6% control vs. 82.7% video group, P = 0.635). No patient had significant anxiety (STAI-6 range, 20 to 40, average 29) and scores were similar between groups (P = 0.385). Overall, patients had positive perceptions of visit quality, and there was no significant difference between groups (P = 0.999).

Conclusion: Patients undergoing SLT had high levels of knowledge, low levels of anxiety, and high levels of satisfaction. In this clinical setting, an educational video seemed to have no additional benefit on these metrics and thus, may be omitted. Further research may be directed toward optimizing patient education regarding SLT, particularly in settings with poor health literacy, limited resources, or limited access to glaucoma specialists.

Key Words: glaucoma, selective laser trabeculoplasty, patient education, video education

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Glaucosa is a leading cause of irreversible vision loss worldwide. In glaucoma, retinal ganglion cells undergo degeneration, leading to progressive vision loss. It is known that decreasing intraocular pressure (IOP) can slow the rate of glaucomatous vision loss. The initial management of glaucoma often involves the use of pressure-lowering eye drops including beta-blockers and prostaglandin inhibitors. More invasive treatment options include surgical interventions to allow for improved aqueous humor outflow and decreased IOP and are usually reserved for moderate to severe cases of glaucoma. In addition to drops and surgery, patients may undergo in-office laser treatments to improve aqueous outflow such as selective laser trabeculoplasty (SLT). SLT uses a laser to improve outflow through the trabecular meshwork, which is part of the conventional aqueous outflow pathway and is dysfunctional in patients with glaucoma. The LiGHT trial recently showed that SLT is reasonable as a first-line alternative to IOP-lowering drops in treatment-naive patients with glaucoma. Given side effects of glaucoma eye drops and the fact that patients often demonstrate poor adherence to drops, SLT as a first-line therapy for glaucoma may improve patient satisfaction and outcomes in routine glaucoma care. As such, it is important to understand patient-reported outcomes related to SLT.

Patient education and informed consent are a critical part of the perioperative visit for SLT. Preoperative education has been shown to improve patient understanding and satisfaction in cataract surgery patients. Currently, there are no standardized recommendations for preoperative counseling and education in patients undergoing procedural interventions for glaucoma, including SLT. In other surgical specialties, doctors have demonstrated the potential value of incorporating multimedia in informed consent and preoperative patient education. Studies have shown that video-assisted informed consent may lead to better knowledge retention and increased patient satisfaction. In addition, a recent study showed that in routine glaucoma management, a short educational video improved patient retention of knowledge. No studies to date have assessed whether laser treatments for glaucoma induce patient anxiety in the perioperative period. A diagnosis of glaucoma has been associated with anxiety in previous studies—it is not clear whether this affects the patient experience surrounding SLT.

In this prospective study, we characterize patient knowledge regarding glaucoma and SLT, patient satisfaction with the visit and provider, and anxiety before SLT treatment in patients who observe an educational video during the perioperative visit and those who do not.
MATERIALS AND METHODS

Informed Consent and Ethical Considerations

This prospective study was approved by the Duke University Medical Center Institutional Review Board and the requirement for informed consent was waived. This study was conducted in accordance with the tenets of the Declaration of Helsinki.

Patient Selection and Survey Administration

Patients of ages 18 to 89 years presenting for an SLT procedure visit with 3 glaucoma specialists (J.R., K.M., or D.G.) at the Duke University Eye Center between October 1, 2018 and October 1, 2019 were included in the study. Patients were randomized to intervention (video) or control (no video) groups at the time of the SLT visit. At the beginning of the visit, patients were placed in examination rooms and either viewed an educational video or did not. Following the educational video, the patients were presented with a survey designed to assess their level of knowledge regarding glaucoma and SLT, and their level of anxiety before the SLT treatment. The patients then had typical preoperative counseling from their glaucoma specialists, and SLT was performed after informed consent and answering of any specific patient questions. Following the visit, patients answered questions regarding visit quality and provider quality to assess patient satisfaction between those viewing a video and those who did not. Following the SLT procedure visit, the glaucoma specialists then answered 3 questions regarding their perceptions of patient understanding and quality of care provided.

Survey Development and Educational Video

The 28-question patient survey (see Survey, Supplemental Digital Content 1, http://links.lww.com/IJG/A450) was designed to assess patients’ knowledge, anxiety, and satisfaction. The survey form consisted of 5 questions assessing demographic data, 10 glaucoma-related knowledge questions (5 multiple choice questions +5 yes/no questions), 2 Likert scale questions and 2 “1-5” scoring questions regarding visit quality, and the 6-item State-Trait Anxiety Inventory (STAI-6) short form to assess patient anxiety.20,21 The patient survey was written at a seventh grade reading level to limit potential confounders because of disparities in the health literacy.22

The educational video (Rendia, Inc., Baltimore, MD) was 50 seconds long and featured plain-language explanations of glaucoma and SLT, detailing the SLT procedure, the effects of SLT on the trabecular meshwork, the beneficial effect of lowering IOP in glaucoma, expectations regarding pain during the procedure, and postoperative recovery and follow-up after SLT. This animated video was shown to the patient when they first arrived at the clinic and were placed in an examination room; after the video, the study survey was administered. Patients received typical preoperative counseling in addition to the educational video after completing the knowledge and anxiety portions of the survey.

Statistical Analysis

Statistical analysis was performed using XLSTAT (Addinsoft, Paris, France). Descriptive statistics were performed to characterize demographic variables. Fisher exact tests were used to compare categorical variables, and 2-tailed t tests were used to compare continuous variables. An alpha of 0.05 was used to define statistical significance in all analyses. A score of ≥40 on the STAI-6 was used to denote significant patient anxiety.20,21

RESULTS

Twenty-two patients of 3 glaucoma specialists participated in this study; 11 patients viewed a brief educational video in addition to typical provider counseling and 11 patients received typical counseling without an educational video. Table 1 describes demographic data for study patients. Overall knowledge assessment performance was similar between the groups who viewed a video and those who did not (average 82.7% video group vs. 83.6% control group, \( P = 0.635 \) (Fig. 1). The proportion of patients missing individual questions did not differ between groups for any of the 10 questions assessing knowledge of glaucoma and SLT.

STAI-6 anxiety scores were also similar between the groups who viewed a video and those who did not (average 31 video group vs. 27 control group, \( P = 0.385 \) (Fig. 2). Scores ranged from a minimum of 20 to a maximum of 40; no patients scored >40, suggesting no significant perioperative anxiety among all patients.

Patient satisfaction was high among all patients across quality metrics. There was no significant difference between the video and control groups in regard to perceptions of quality of care. Patients across both groups felt their providers explained SLT well (82% “strongly agree” that providers’ explanation was sufficient in the control group vs. 73% in the video group, all analyses. A score of ≥40 on the STAI-6 was used to denote significant patient anxiety.20,21

### TABLE 1. Demographic Characteristics of Patients (N = 22) Enrolled in This Study

| Patient Characteristics | Video (n = 11) | No Video (n = 11) |
|-------------------------|--------------|-----------------|
| Age* (range)            | 74 (59-86)   | 67 (43-81)      |
| Sex (male) (%)          | 64           | 64              |
| English first language? | 10/11        | 10/11           |
| Highest education, n/N (%) |                     |                 |
| High school             | 2/11 (18)    | 1/11 (9)        |
| Undergraduate           | 4/11 (36.5)  | 5/11 (45.5)     |
| Graduate                | 5/11 (45.5)  | 5/11 (45.5)     |

**Mean age in years.**
In this intervention-based pilot survey study to assess patient education, anxiety, and satisfaction in patients with glaucoma before undergoing SLT, we demonstrated that in our patient population, with a relatively small sample size, patients had relatively high levels of knowledge, low levels of anxiety, and high levels of satisfaction, even without an educational intervention. We introduced an educational video to the procedure visit for SLT to determine whether this would improve patient outcomes. We found that this intervention did not increase retention of knowledge or decrease anxiety in our patients; however, we hypothesize that patients with low baseline knowledge or high baseline anxiety may exhibit a greater change after the video intervention. No patients in our cohort had high levels of anxiety.

It is also possible that a lack of improvement in patient knowledge, anxiety, and satisfaction may be inherent to the nature of SLT. Patients have relatively high anxiety when entering the operating room, but it is possible that an in-office procedure such as SLT would not generate acute anxiety in the same way as intracocular surgery. In a recent study by Al Owaifeer et al., a video intervention improved scores on a knowledge assessment that was administered before and after the educational video. However, the patient population of that study included a large proportion of illiterate patients, who may benefit more from an educational video more than other patient cohorts. This hypothesis may be better supported with larger studies of educational video administration in individuals from various socioeconomic backgrounds. Our patient population was highly educated (19/22 patients had at least undergraduate college education), which could partially explain high scores on the glaucoma knowledge assessment in the control arm of the study.

The present study has several limitations. The primary limitation of this study is its small sample size—with a larger group of patients, it would be possible to determine the effects of video education among stratified groups of individuals (eg, older vs. younger patients, patients with pre-existing anxiety disorders) if it were present. We also found that our control arm had high knowledge and satisfaction metrics in the absence of an intervention—if our patient population had lower knowledge and satisfaction metrics, our video education intervention may have had an effect on these metrics. In addition, we did not collect health information including previous history of glaucoma treatment and number of years living with glaucoma—it could be that our patient population was highly educated regarding glaucoma because of prior experience with the treatment of this condition. As our video and survey were administered at the time of the SLT procedure visit, many patients had already received some degree of counseling (eg, older vs. younger patients, patients with pre-existing anxiety disorders) if it were present. We hypothesized that patients might still exhibit knowledge deficits at the time of SLT procedure despite some previous counseling; however, it is possible that prior counseling at initial consult may have biased our survey results toward higher knowledge across both groups. Finally, there is inherent bias in any facility-administered survey study that attempts to assess patient satisfaction. It is possible that patients who elected to participate were happy with their care, and this could bias our results.

In the context of the LiGHT trial, our study provides further evidence that SLT is a suitable first-line treatment in glaucoma management. If a larger study were to confirm the results of our study, namely, that patients have high levels of knowledge with low levels of perioperative anxiety and high satisfaction, even in the control arm, it would
provide further evidence that SLT is a suitable first-line treatment in glaucoma management. We found that patients had low anxiety before SLT. As such, providers may feel reassured in recommending SLT to patients as it did not seem to generate significant patient anxiety in our limited sample size; however, clinicians should continue to make clinical judgments regarding SLT on an individual basis.

In our clinical setting, an educational video did not provide additional educational benefits and may be omitted from the SLT procedural visit. We suggest that future studies should be directed toward assessing preferences in multimedia-informed consent and assessing the benefits of video education among patients with poor health literacy, patients who have limited knowledge of glaucoma at baseline, and in resource-poor settings with limited access to glaucoma specialists.

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