

SLT Bibliography

2013

Using this Bibliography

The following SLT bibliography was organized in a manner which can facilitate your search of relevant studies and/or papers. The first two pages (pages # 3-4) contain a general matrix overview of all the studies covered in this document and the relevant categories under which they fall. Occasionally, studies may fall under more than a single category; this is reflected accordingly through the dotted system in this section. The “Study No.” column on the far left side correlates to same column in the extended bibliography charts found in the following pages (pages # 5-34). After identifying the study or studies of interest, note the relevant “Study No.” and easily locate the detailed account in the extended bibliography section of this document.

About Lumenis SLT

Selective Laser Trabeculoplasty (SLT) technology was developed and brought to market by Lumenis, based on the work of Dr. Mark Latina, MD, et.al.

Today, Lumenis prides itself as the company with the most robust clinical data on SLT, the largest global installed-base of SLT products, the widest range of added-value products & services to maximize SLT potential in your practice - including robust patient education collateral & multimedia - and much more! When you buy an SLT product from Lumenis, you gain immediate access to the largest network of SLT users worldwide, receive product upgrades & updates, advance-notice invitations to SLT symposia & workshops all around the world and a long list of other benefits which are exclusive to Lumenis SLT customers. Furthermore, all Lumenis SLT products were designed to meet the clinically recommended SLT treatment protocol that we have helped to shape.

Buying a Lumenis SLT product guarantees your ability to customize treatment on a case-by-case basis and meet SLT treatment protocol requirements.

The Clinical Advantages of Lumenis SLT

Selective Laser Trabeculoplasty (SLT) is a clinically proven laser treatment to reduce IOP without coagulating the Trabecular Meshwork. SLT represents an evolution over previous laser therapies as it can be safely repeated if needed.

SLT - Mechanism of Action:

Lumenis SLT technology uses a Q-switched, frequency-doubled Nd:YAG; 532 nm wavelength green laser. When applied to the target tissue, the laser is selectively absorbed by melanin-containing pigmented cells in the Trabecular Meshwork, without causing thermal or coagulative collateral damage to adjacent tissue. The increase in expression of biological cytokines and cellular mediator activities following laser irradiation recruit macrophages to the Trabecular Meshwork. In turn, macrophages remove obstructive proteins and remodel the Trabecular Meshwork, improving aqueous humor outflow and, thereby, reducing intraocular pressure (IOP).



Guide to Study Content

STUDY NO.	SLT v. ALT	Secondary Glaucoma	Clinical Outcomes	Repeat-ability	Intraocular fluctuations	Basic Science Review	Predictive Factors	Method-ology	Primary Therapy	Adjunct Therapy	Replacement Therapy	Post ALT Treatment	Long-Term Follow Up	Health Economics	Complica-tions	SLT vs. Meds
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Total Studies by Topic	20	22	86	2	4	33	7	4	7	14	3	1	9	3	11	2

Bibliography

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
1	Peer reviewed Article	Clinical Outcomes Secondary Glaucoma	Comparison of the efficacy and safety of selective laser trabeculoplasty in cases with primary open-angle glaucoma and pseudoexfoliative glaucoma.	Kara N, Altan C, Yuksel K, Tetikoglu M.	Department of Ophthalmology, Kanuni Sultan Suleyman Education and Research Hospital, Istanbul, Turkey.	Kaohsiung J Med Sci. 2013 Sep;29(9):500-4.	2013	English	The purpose of this study was to compare the efficacy and safety of selective laser trabeculoplasty (SLT) for patients with primary open-angle glaucoma (POAG) and pseudoexfoliative glaucoma (PXG). In this retrospective case series, 85 eyes (48 POAG, 37 PXG) of 85 patients were investigated. The medical records of patients who underwent SLT for POAG or PXG were reviewed. The main outcome measures included intraocular pressure (IOP)-lowering effect and ocular side effects. The mean decrease in IOP differed significantly ($p < 0.001$) between eyes with POAG (-4.4 ± 2.1 mmHg) and eyes with PXG (-6.1 ± 3.6 mmHg) at a mean follow-up period of 1 year. The rate of side effects, such as early IOP spike and uveitis, did not significantly differ between the two groups. In conclusion, SLT has a greater IOP-lowering effect in PXG compared with POAG.
2	Peer reviewed Article	Clinical Outcomes Adjuvant treatment	Selective Laser Trabeculoplasty Following Failed Combined Phacoemulsification Cataract Extraction and Ab Interno Trabeculectomy.	Töteberg-Harms M, Rhee DJ.	Massachusetts Eye & Ear Infirmary, Harvard Medical School, Boston, Massachusetts.	Am J Ophthalmol. 2013 Aug 7.	2013	English	<p>PURPOSE: To assess the effect of selective laser trabeculoplasty (SLT) following failed phacoemulsification cataract extraction combined with ab interno trabeculectomy (AIT) using the Trabectome (phaco-trabectome).</p> <p>DESIGN: Randomized, interventional case series.</p> <p>METHODS: Retrospectively, the medical records of patients who underwent SLT between March 2010 and July 2012 by 1 surgeon at a single center after a failed phaco-AIT were evaluated. Inclusion criteria were age ≥ 18 years with no upper limit and prior failed phaco-AIT attributable to glaucoma progression. Exclusion criterion was performance of any additional glaucoma procedure with influence on intraocular pressure (IOP) during follow-up and a follow-up after surgery of < 3 months. Success was defined by reduction of IOP of > 3 mm Hg and 20% and number of antiglaucoma medications equal to or less than baseline. Main outcome measures were IOP, antiglaucoma medications, time to failure, and Kaplan-Meier survival curve.</p> <p>RESULTS: Fourteen eyes of 13 subjects were included. Mean follow-up after SLT was 12.9 ± 8.7 months. Total laser energy was 59.5 ± 8.7 mJ. Baseline IOP was 17.9 ± 3.3 mm Hg and number of antiglaucoma medications at baseline was 2.0 ± 1.0. All SLT procedures failed. Median time to failure after SLT was 3.6 ± 0.8 (range 2.1-5.1) months. Number of antiglaucoma medications did not change.</p> <p>CONCLUSIONS: In eyes in which the IOP was no longer controlled following phaco-trabectome, SLT had a limited duration of significant IOP-lowering effect. Other alternatives, such as incisional filtration surgery, should be considered following failed phaco-trabectome.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
3	Peer reviewed Article	Clinical Outcomes Secondary Glaucoma Adjuvant treatment	Selective laser trabeculo-plasty success in pediatric patients with glaucoma: two case reports.	Song J, Song A, Palmares T, Song M.	Long Beach Memorial Medical Center, Long Beach, CA, USA.	J Med Case Rep. 2013 Jul 26;7(1):198.	2013	English	<p>INTRODUCTION: Selective laser trabeculoplasty is a treatment option to lower intraocular pressure in patients with glaucoma. It has been proven to work in adults. We describe two pediatric patients with glaucoma who responded well to selective laser trabeculoplasty.</p> <p>CASE PRESENTATIONS: Two patients with pediatric glaucoma underwent selective laser trabeculoplasty. Patient 1 was a nine-year-old Iranian Asian girl with secondary aphakic glaucoma who was taking four glaucoma medications. She had a 50% decrease in intraocular pressure five weeks after selective laser trabeculoplasty. She was able to discontinue all four glaucoma drops after treatment. Patient 2 was a 13-year-old Filipino Caucasian boy who presented with early juvenile open-angle glaucoma and who was on no medications. He had a 40% drop in intraocular pressure four weeks after selective laser trabeculoplasty.</p> <p>CONCLUSION: Selective laser trabeculoplasty can decrease intraocular pressure in pediatric patients with glaucoma, both as a primary and secondary therapy. This study demonstrates that selective laser trabeculoplasty is a good option for the treatment of glaucoma in the pediatric population.</p>
4	Peer reviewed Article	Predictive factors	Corneal biomechanics predict the outcome of selective laser trabeculo-plasty in medically uncontrolled glaucoma.	Hirneiß C, Sekura K, Brandlhuber U, Kampik A, Kernt M.	Augenlinik der Ludwig-Maximilians-Universität München, Munich, Germany	Graefes Arch Clin Exp Ophthalmol. 2013 Oct;251(10):2383-8.	2013	English	<p>PURPOSE: To evaluate the predictive value of clinical parameters, including biomechanical properties on the outcome of selective laser trabeculoplasty (SLT) in medically uncontrolled open angle glaucoma (OAG).</p> <p>METHODS: Sixty-eight eyes from 68 patients with OAG and IOP insufficiently regulated by topical medications were enrolled. Patients' follow-up occurred 6 and 12 months after the procedure. The recorded parameters intraocular pressure (IOP), angle characteristics, central corneal thickness (CCT) and biomechanical properties of the eyes, including corneal hysteresis CH and corneal resistance factor CRF measured with the Ocular Responses Analyzer (ORA, Reichert Ophthalmic Instruments) were tested on their predictive value of SLT-induced IOP lowering effect using correlation analyses and regression models.</p> <p>RESULTS: Mean IOP reduction 12 months after SLT was 4.2 ± 5.7 mmHg (23.2 %, from baseline 18.1 ± 5.2 mmHg). The preoperative IOP correlated significantly with IOP reduction (maximum Spearman's correlation $r=0.75$, $p<0.001$). In linear regression analysis, the corneal biomechanical properties (CH and CRF) together with the baseline IOP revealed good modelling for the IOP lowering effect of SLT ($R(2)=0.64$, respectively).</p> <p>CONCLUSIONS: In addition to the baseline IOP biomechanical properties (CH and CRF) are significant predictors of SLT induced IOP lowering effect in medically uncontrolled OAG.</p>

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5	Peer reviewed Article	SLT vs. ALT Secondary Glaucoma	A Randomized Clinical Trial of Selective Laser Trabeculoplasty Versus Argon Laser Trabeculoplasty in Patients With Pseudoexfoliation.	Kent SS, Hutnik CM, Birt CM, Damji KF, Harasymowycz P, Si F, Hodge W, Pan I, Crichton A.	Department of Ophthalmology, University of Western Ontario, London; Department of Ophthalmology and Vision Sciences, University of Toronto, Toronto, ON; Department of Ophthalmology, University of Alberta, Edmonton; Department of Ophthalmology, University of Calgary, Calgary, AB; Department of Ophthalmology, University of Montreal, Montreal, QC, Canada.	J Glaucoma. 2013 Jul 17.	2013	English	<p>PURPOSE: To evaluate the efficacy of selective laser trabeculoplasty (SLT) versus argon laser trabeculoplasty (ALT) in lowering the intraocular pressure (IOP) in patients with open-angle glaucoma or ocular hypertension secondary to pseudoexfoliation.</p> <p>DESIGN: Multicentered randomized clinical trial.</p> <p>PARTICIPANTS: A total of 76 eyes from 60 patients with pseudoexfoliation and uncontrolled IOP were recruited from 5 Canadian academic institutions. Patients with prior laser trabeculoplasty, ocular surgery within 6 months, previous glaucoma surgery, an advanced visual field defect, current steroid use, and monocular patients were excluded.</p> <p>METHODS: Eyes were randomized to receive either 180-degree SLT or 180-degree ALT by a nonblocked randomization schedule stratified by center.</p> <p>MAIN OUTCOME MEASUREMENT: The primary outcome was the change in IOP at 6 months versus baseline and secondary outcomes included change in number of glaucoma medications after laser. Baseline variables included age, sex, angle grade, angle pigmentation, and number of glaucoma medications.</p> <p>RESULTS: Of the 76 eyes, 45 eyes received SLT and 31 eyes received ALT. The overall age was 72.9 years (65% females). The baseline IOPs in the SLT and ALT groups were 23.1 and 25.2 mm Hg, respectively ($P=0.03$). The IOP reduction 6 months after SLT was -6.8 mm Hg and post-ALT was -7.7 mm Hg ($P>0.05$). The SLT group had reduced glaucoma medications by 0.16 medications at 6 months and the ALT group had no decrease in medications over the same time period ($P=0.59$). There were no postlaser IOP spikes in either group.</p> <p>DISCUSSION: ALT and SLT are equivalent in lowering IOP at 6 months posttreatment in patients with PXF.</p>
6	Peer reviewed Article	Clinical Outcomes	Efficacy of Selective Laser Trabeculoplasty in Phakic and Pseudophakic Eyes.	Seymenoğlu G, Baser EF.	Department of Ophthalmology, Faculty of Medicine, Celal Bayar University, Manisa, Turkey.	J Glaucoma. 2013 Jun 25.	2013	English	<p>PURPOSE: To compare the efficacy of selective laser trabeculoplasty (SLT) in phakic and pseudophakic eyes in open-angle glaucoma and ocular hypertension.</p> <p>MATERIALS AND METHODS: Charts of 28 pseudophakic eyes and 60 phakic eyes that underwent 360-degree SLT were retrospectively reviewed. Patients were examined at 1, 3, 6, and 12 months. Treatment success was defined as $\geq 20\%$ intraocular pressure (IOP) reduction, with no additional medications, laser, or glaucoma surgery. Mean IOP change, mean percentage of IOP reduction, and success rates for phakic and pseudophakic eyes were compared.</p> <p>RESULTS: Mean percentage of IOP reduction post-SLT at 1-, 3-, 6-, and 12-month visits were 21.4%, 25.8%, 24.8%, and 23.7%, respectively, in the pseudophakic group and 22.8%, 25.0%, 25.7%, and 21.2%, respectively, in the phakic group. Success rates ranged between 60% and 64% in the pseudophakic group and between 58% and 73% in the phakic group. No statistically significant differences in IOP change, percentage of IOP reduction, and success rate were seen between the groups at any of the post-SLT visits ($P>0.05$).</p> <p>CONCLUSIONS: Application of 360-degree SLT seems to be an efficient and safe treatment option for the management of phakic and pseudophakic open-angle glaucoma and ocular hypertension.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
7	Peer reviewed Article	Review Clinical Outcomes	Meta-analysis of selective laser trabeculoplasty with argon laser trabeculoplasty in the treatment of open-angle glaucoma.	Wang H, Cheng JW, Wei RL, Cai JP, Li Y, Ma XY.	Department of Ophthalmology, Shanghai Changzheng Hospital, Second Military Medical University, Shanghai, China.	Can J Ophthalmol. 2013 Jun;48(3):186-92.	2013	English	<p>OBJECTIVE: To evaluate the efficacy and tolerability of selective laser trabeculoplasty (SLT) and argon laser trabeculoplasty (ALT) in the treatment of open-angle glaucoma.</p> <p>DESIGN: Systematic review and meta-analysis.</p> <p>PARTICIPANTS: Six clinic studies, all of which were random controlled trials.</p> <p>METHODS: Pertinent studies were selected through extensive searches of PubMed, Cochrane Library, Embase, and meeting abstracts. Efficacy measures were weighted by mean differences for intraocular pressure (IOP), as well as change of number of glaucoma medications and relative risks (RRs) for therapeutic IOP responses. Tolerability measures were RRs for adverse events. Pooled estimates were carried out in RevMan software 5.1.</p> <p>RESULTS: SLT was associated with a numerically larger reduction compared with ALT, with a weighted mean difference (WMD) of 0.60 (95% CI, 0.06-1.14). There was no significant difference in therapeutic IOP responses between SLT and ALT, with a pooled RR of 0.84 (95% CI, 0.51-1.38). Patients who received SLT took fewer glaucoma medications after operations than those who received ALT, with a WMD of 0.29 (95% CI, 0.01-0.56). When compared in patients with previous failed laser treatment (ALT or SLT), SLT was more effective in IOP reduction than ALT with a WMD of 1.48 (95% CI, 0.75-2.21). The frequencies of anterior chamber flare and IOP peak after operation were similar comparing SLT and ALT, with pooled RRs of 0.90 (95% CI, 0.74-1.11) and 0.90 (95% CI, 0.45-1.82), respectively.</p> <p>CONCLUSIONS: SLT was associated with relatively higher efficacy of IOP lowering compared with ALT. SLT results in a larger reduction of number of glaucoma medications versus ALT, and it appeared to be more effective for patients who did not respond adequately to previous laser treatment. The difference in tolerability of the 2 lasers was not significant.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
8	Peer reviewed Article	Long Term Follow Up	Results of selective laser trabeculoplasty (SLT) as initial treatment for normal tension glaucoma	Nitta K, Sugiyama K, Mawatari Y, Tanahashi T.	Department of Ophthalmology, Fukui-ken Saiseikai Hospital, Fukui-shi, Japan.	Nihon Ganka Gakkai Zasshi. 2013 Apr;117(4):335-43.	2013	Japanese	<p>PURPOSE: A 3-year prospective study was performed to evaluate treatment outcomes following selective laser trabeculoplasty (SLT) used as initial treatment for normal tension glaucoma (NTG).</p> <p>SUBJECTS AND METHODS: SLT was performed as initial treatment in 42 NTG patients (42 eyes). Thirty-seven of the patients were untreated and 5 patients had discontinued antiglaucoma medications. Two patients were excluded because they did not visit our clinic during the study period. The study was conducted on the remaining subjects (40 eyes of 40 patients).</p> <p>RESULTS: The intraocular pressure (IOP) was 15.8 +/- 1.8 mmHg before SLT, 13.2 +/- 1.9 mmHg after one year, 13.5 +/- 1.9 mmHg after two years, and 13.5 +/- 1.9 mmHg after three years. The IOP after SLT was significantly lower than that before SLT. One month after SLT, the outflow pressure was improved at least 20% (deltaOP) in 92.5% of the patients. The success rate for the effect of IOP reduction at three years after SLT was 40.0% by Kaplan-Meier survival analysis. 27.5% of the patients who had two consecutive deltaOP less than 20%, 25.0% of the patients who had begun antiglaucoma ophthalmic solution, and 15.0% of the patients who had undergone repeated SLT were judged to have reached the endpoint. Kaplan-Meier survival analysis revealed that the success rate for the visual field at three years after SLT was 82.4% (the visual field loss progression was judged to have reached its endpoint when a significant sensitivity loss was first detected in two consecutive points of the same adjacent test points of at least 3 points in the Glaucoma Progressive Analysis for the Humphrey Visual Field Analyzer). Complications included conjunctival hyperemia (52.5%), eye discomfort (12.5%), visual disturbance (blurry vision and photophobia) (10.0%), and eye pain (5.0%). These complications resolved within a few days, and there were no severe complications such as increased IOP or iritis.</p> <p>CONCLUSION: Our results suggest that SLT is an effective initial treatment for NTG.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
9	Peer reviewed Article	Complications	Cystoid macular oedema following selective laser trabeculoplasty in a diabetic patient.	Ha JH, Bowling B, Chen SD.	Sydney Eye Hospital, Sydney, New South Wales, Australia.	Clin Experiment Ophthalmol. 2013 Apr 22.	2013	English	We report a case of cystoid macular oedema (CMO) precipitated by selective laser trabeculoplasty (SLT) performed to treat steroid-induced ocular hypertension in a diabetic patient. A 47-year-old diabetic male complained of blurred vision in the right eye. The right visual acuity (VA) was 6/9 and the intraocular pressure (IOP) was 16 mm Hg. Examination revealed bilateral moderate non-proliferative diabetic retinopathy and right clinically significant macular oedema (CSMO), also evident on optical coherence tomography (OCT) scanning. Fluorescein angiography demonstrated multiple leaking perifoveal microaneurysms which were too close to the foveal centre to be treated safely with focal laser photocoagulation. A right posterior sub-Tenon triamcinolone injection (40 mg in 1 ml) was administered. Four weeks later, the right VA had improved to 6/7.5, associated with almost complete resolution of macular thickening on OCT. However, the right IOP had risen to 24 mm Hg. Topical brinzolamide 10 mg/mL and timolol 5 mg/mL twice daily was prescribed. Seven months after the triamcinolone injection, the right VA had improved to 6/6, though OCT demonstrated mild recurrent CMO (Figure 1). The right IOP was now 37 mm Hg despite continued topical treatment. Consequently, right SLT was performed, with 100 x 0.9 mJ shots divided evenly over the entire angle circumference. Seven days following SLT, the right IOP had fallen to 16 mm Hg, but the patient reported that a marked deterioration in right vision had developed within 12 hours of the SLT being performed. The best corrected right VA was now 6/18, associated with marked macular oedema on OCT scanning (Figure 2). Topical ketorolac trometamol 5mg/ml (Allergan Australia Pty Ltd) four times a day for eight weeks and dexamethasone 1mg/ml (Alcon Laboratories, Australia Pty Ltd) four times a day for two weeks was prescribed. A gradual improvement in VA to 6/9 and reduction in CMO occurred during the subsequent eight weeks.
10	Peer reviewed Article	Long term Follow up Secondary Glaucoma	Long-term Outcomes of Selective Laser Trabeculoplasty (SLT) Treatment in Pigmentary Glaucoma Patients.	Ayala M.	Glaucoma Department, St. Erik Eye Hospital, Karolinska Institutet, Stockholm, Sweden.	J Glaucoma. 2013 Feb 19.	2013	English	<p>PURPOSE: The aim of the present study was to assess the long-term efficacy of selective laser trabeculoplasty (SLT) treatment in patients suffering from pigmentary glaucoma (PG).</p> <p>METHODS: Retrospective chart review of eyes suffering from PG that underwent SLT between January 1, 2005 and December 31, 2006. The primary outcome measure was time to failure after SLT treatment. Failure after SLT was defined as any 1 or more of the following: <20% intraocular pressure reduction, change in the medical treatment, performance of a further SLT treatment, and the patient being sent for surgery. All patients were treated over 180 degrees with SLT.</p> <p>RESULTS: Thirty eyes of thirty patients were identified. The average time to failure after SLT was 27.4 months. The success rate after 12 months was 85%, after 24 months 67%, after 36 months 44%, and after 48 months 14%.</p> <p>CONCLUSIONS: The long-term effects of SLT in PG when eyes were treated over 180 degrees seem to be low.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
11	Peer reviewed Article	Clinical outcomes Repeat-ability	Repeatability of primary selective laser trabeculoplasty in patients with primary open-angle glaucoma.	Avery N, Ang GS, Nicholas S, Wells A.	Capital Eye Specialists, Te Aro, Wellington, New Zealand	Int Ophthalmol. 2013 Oct;33(5):501-6.	2013	English	<p>To determine if primary selective laser trabeculoplasty (SLT) can be repeated with clinical benefit in patients with primary open-angle glaucoma (POAG). Forty-two eyes of 42 patients with POAG were studied. All patients underwent primary SLT treatment of 40-50 shots to the trabecular meshwork over 360°. The treatment response at the initial post-SLT visit (4 weeks), and second post-SLT visit (mean 4 months), clinical success and duration of clinical success were measured. SLT was repeated in all patients after failure to maintain target intraocular pressure (IOP). The same parameters were measured after repeat SLT. The main outcome measures were success of treatment (as defined by reduction of IOP by at least 20 % and below an individually determined target pressure), duration of treatment success and reduction in IOP. No significant difference between initial and repeat treatments was found for mean reduction in IOP or success rate, or duration of success. Survival analysis found significantly longer benefit for repeat treatment compared to initial treatment ($P < 0.01$).</p> <p>Repeat SLT treatment in eyes with POAG has similar efficacy to primary SLT treatment with respect to reduction in IOP and success rates, produces a longer duration of treatment success.</p>
12	Peer reviewed Article	Clinical Outcomes	Selective laser trabeculoplasty for the management of open-angle glaucoma in St. Lucia.	Realini T.	West Virginia University, Morgantown, WV, USA.	JAMA Ophthalmol. 2013 Mar;131(3):321-7.	2013	English	<p>OBJECTIVE: To evaluate the efficacy of selective laser trabeculoplasty (SLT) for the treatment of primary open-angle glaucoma in an African-derived population in the developing world.</p> <p>METHODS: Sixty-one subjects from St. Lucia with medically treated primary open-angle glaucoma underwent a 30-day washout, followed by bilateral 360° SLT. Intraocular pressure (IOP) was measured 1 hour; 1 week; and 1, 3, 6, 9, and 12 months after SLT.</p> <p>RESULTS: Mean (SD) IOP with medical therapy was 17.3 (5.0) mm Hg and 17.5 (4.0) mm Hg in the right and left eyes, respectively, and increased to 21.4 (3.6) mm Hg and 21.1 (3.5) mm Hg, respectively, after washout. Both eyes demonstrated a prompt and sustained IOP response to SLT therapy. Intraocular pressure dropped significantly by the first week and remained in the range of 13 to 14 mm Hg without medical therapy through 12 months in patients deemed successful. The mean IOP reductions from baseline ranged from 7.3 to 8.3 mm Hg (34.1%-38.8%) in right eyes and from 7.6 to 8.2 mm Hg (36.0%-38.9%) in left eyes through 12 months. The 12-month Kaplan-Meier survival rate ($\geq 10\%$ IOP reduction from postwashout baseline) was 77.7%, and 93% of successful subjects experienced IOP levels less than with-medication values. Most subjects reported moderate photophobia for 2 to 3 days after SLT; only 1 received anti-inflammatory therapy. Five eyes of 3 subjects had IOP spikes between 5 and 10 mm Hg that resolved without treatment.</p> <p>CONCLUSIONS: The magnitude and duration of IOP reduction are clinically relevant in individuals from St. Lucia of African descent. If repeatable, SLT could be a powerful tool for reducing glaucoma-related blindness in this population.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
13	Peer reviewed Article	Basic Research	Corneal endothelial changes after selective laser trabeculoplasty.	Ong K, Ong L, Ong L.	Department of Ophthalmology, University of Sydney, Sydney, New South Wales, Australia.	Clin Experiment Ophthalmol. 2013 Aug;41(6):537-40.	2013	English	<p>BACKGROUND: Whitish spots are sometimes noted in the corneal endothelium after selective laser trabeculoplasty. To evaluate the corneal endothelium after selective laser trabeculoplasty, corneal specular microscopy was performed.</p> <p>DESIGN: Prospective observational study in a private practice.</p> <p>PARTICIPANTS: Fifteen consecutive patients with open-angle glaucoma undergoing selective laser trabeculoplasty in February 2012 had their corneal endothelium examined with specular microscopy before and after treatment.</p> <p>METHODS: Selective laser trabeculoplasty was done with 50 ± 5 shots to 180 degrees of meshwork using 0.3-0.9 mJ of power to achieve the reaction of a hint of microbubbles in 80% of laser shots.</p> <p>MAIN OUTCOME MEASURES: Corneal specular microscopy photographs (0.25×0.54 mm) were taken prior to, immediately after and 1 month after selective laser trabeculoplasty. These photographs were assessed and graded.</p> <p>RESULTS: Of the 15 patients, three showed numerous, four showed few and eight showed no increase of dark spots after selective laser trabeculoplasty. All the dark spots resolved by 1 month.</p> <p>CONCLUSION: The effect of selective laser trabeculoplasty on the corneal endothelium may be transient, and long-term effects are probably negligible in normal corneas. However, in compromised corneas and corneas with pigment deposits on endothelium, there may be a risk of corneal endothelial compromise, especially after repeated selective laser trabeculoplasty. Larger and longer term studies with histopathological evaluation would be useful to evaluate the effect of selective laser trabeculoplasty on normal and subnormal corneal endothelium. Until further studies are done, it would be wise to minimize the number and energy of laser shots.</p>
14	Peer reviewed Article	Clinical Outcomes	The outcome of 270-degree selective laser trabeculoplasty.	Pehkonen PT, Välimäki JO.	Department of Ophthalmology, Päijät-Häme Central Hospital, Lahti, Finland.	J Ophthalmol. 2012;Dec 5	2012	English	<p>Purpose. To evaluate the reduction of intraocular pressure (IOP) by a single-session 270° selective laser trabeculoplasty (SLT) in pseudoexfoliation glaucoma (PXFG) and primary open angle glaucoma (POAG) patients.</p> <p>Methods. A successful outcome was defined as an IOP reduction $\geq 20\%$ from baseline with no further need for laser or incisional surgery. The preoperative pharmaceuticals were maintained unchanged throughout the course of the study. 70-80 nonoverlapping pulses were distributed around 270° in the trabecular band. Results. Sixty-six eyes of 42 patients with PXFG (30 eyes) or POAG (36 eyes) met the inclusion criteria. The mean \pm standard deviation preoperative IOP was 23.7 ± 4.5 mmHg and at the end of the followup was 19.0 ± 4.5 mmHg with a pressure drop of 4.7 ± 3.1 mmHg (20%) ($P < 0.001$, 95% confidence interval 3.94-5.46). The cumulative probability of success was 39% (26 of 66 eyes) after 6 months of followup. Statistically significant differences in success rates were observed between the PXFG and POAG groups (27% versus 50%; $P = 0.025$). Postoperative inflammatory reaction was scanty.</p> <p>Conclusions. 270-degree SLT is useful in lowering IOP in PXFG and POAG, but the average reduction of IOP seems to be within the same range as reported with 180-degree SLT previously.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
15	Peer reviewed Article	Review	Selective laser trabeculoplasty.	Shi JM, Jia SB.	Department of Ophthalmology, the Second Xiangya Hospital of Central South University, Changsha, China.	Int J Ophthalmol. 2012;5(6):742-9.	2012	English	<p>The introduction of selective laser trabeculoplasty (SLT) provided a new choice for the reduction of intraocular pressure (IOP) in eyes with open angle glaucoma (OAG) and ocular hypertension (OHT). SLT was demonstrated equally as effective as topical medical therapy and argon laser trabeculoplasty (ALT) to lower IOP. It is a potentially repeatable procedure because of the lack of coagulation damage to the trabecular meshwork (TM) and also effect in patients with previously failed ALT.</p> <p>SLT can be used to treat patients with OAG, pseudoexfoliation glaucoma, pigmentary glaucoma, normal-tension glaucoma, OHT, juvenile glaucoma, pseudophakic and aphakic glaucoma. Furthermore, SLT can be considered as a primary treatment option in patients who cannot tolerate or are noncompliant with medications, while not interfering with the success of future surgery. Its safety profiles include mild and transient inflammation, ocular pain and a small risk of moderate IOP elevations after the procedure. SLT is a safe and effective means of IOP reduction in eyes with OAG and OHT.</p>
16	Peer reviewed Article	SLT vs ALT	The efficacy of selective laser trabeculoplasty versus argon laser trabeculoplasty in pseudophakic glaucoma patients.	Rosenfeld E, Shemesh G, Kurtz S.	Department of Ophthalmology, Tel-Aviv Sourasky Medical Center, Sackler Faculty of Medicine, Tel Aviv University, Tel Aviv, Israel.	Clin Ophthalmol. 2012;6:1935-40.	2012	English	<p>INTRODUCTION: This study evaluated and compared the efficacy of selective laser trabeculoplasty (SLT) and argon laser trabeculoplasty (ALT) in terms of intraocular pressure (IOP)-lowering effects in pseudophakic patients at various time points after treatment. The primary aim was to compare the efficacy of SLT and ALT in reducing the IOP of pseudophakic glaucoma patients who recently underwent successful cataract extraction surgery. The secondary endpoint was to determine the percentage of SLT and ALT patients whose IOP was successfully reduced by at least 15% from baseline.</p> <p>PATIENTS AND METHODS: This study was a follow-up of a prospective randomized clinical trial. Fifty-two eyes from 52 glaucoma patients with uncontrolled IOP who had previously undergone successful phacoemulsification-assisted cataract excision surgery with intracapsular lens implantation were randomly assigned to treatment with either ALT (n = 30) or SLT (n = 22). Fifteen patients were excluded due to adverse events encountered during the study, leaving a total of 18 and 19 patients in the ALT and SLT groups, respectively. IOP measurements were carried out at scheduled intervals until 12 months post-laser treatment.</p> <p>RESULTS: There were no significant differences in the IOP-lowering effects between the two methods at any time point during the follow-up period. The greatest differences between the two groups were observed at 1 week posttreatment and at the 3-month time point, but neither reached a level of significance. At the final checkup, the mean IOP reduction from baseline was 3.23 mmHg in the ALT group and 4.30 mmHg in the SLT group (P = 0.269). At that visit, six (35.3%) patients in the ALT group and 15 (75%) patients in the SLT group had a reduction of $\geq 15\%$ from their baseline IOP.</p> <p>CONCLUSION: SLT and ALT are equally effective in their IOP-lowering capabilities in new pseudophakic glaucoma patients during the first 12 months after treatment.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
17	Peer reviewed Article	Complications	Selective laser trabeculoplasty complicated by cystoid macular edema: report of two cases.	Wu ZQ, Wu ZQ, Sadda S.	Center for Advanced Eye Care, Carson City, NV, USA; Department of Glaucoma, State Key Laboratory of Ophthalmology, Zhongshan Ophthalmic Center, Sun Yat-sen University, Guangzhou, China; Doheny Retina Institute, University of Southern California Keck School of Medicine, Los Angeles, CA, USA.	Yan Ke Xue Bao. 2012 Dec;27(4):193-7.	2012	English	<p>PURPOSE: Selective laser trabeculoplasty, a relatively novel treatment for open angle glaucoma, is frequently associated with mild post-operative intraocular inflammation.</p> <p>METHODS: We report two uncommon cases of cystoid macular edema within a few weeks of routine selective laser trabeculoplasty.</p> <p>RESULTS: Visual acuities and macular thicknesses of the two cases returned to baseline after medical treatment, but in one case, the cystoid macular edema persisted for months.</p> <p>CONCLUSION: Cystoid macular edema after selective laser trabeculoplasty is fortunately a rare complication, but it might be more common in patients with predisposing factors, and it can be resistant to treatment.</p>
18	Peer reviewed Article	Basic research	Acute transient corneal endothelial changes following selective laser trabeculoplasty.	White AJ, Mukherjee A, Hanspal I, Sarkies NJ, Martin KR, Shah P.	NIHR Biomedical Research Centre, University of Cambridge, UK.	Clin Experiment Ophthalmol. 2013 Jul;41(5):435-41.	2012	English	<p>BACKGROUND: To report for the first time acute transient corneal endothelial changes following selective laser trabeculoplasty.</p> <p>DESIGN: Observational case series at a tertiary referral ophthalmological centre in the United Kingdom (Addenbrooke's Hospital, Cambridge)</p> <p>PARTICIPANTS: Ten consecutive routinely treated patients.</p> <p>METHODS: Baseline measurements of corneal specular microscopy, endothelial cell counts and in vivo confocal microscopy were performed prior to routine selective laser trabeculoplasty treatment. Repeat measurements were made approximately 1 h later and at a 6-week follow up.</p> <p>MAIN OUTCOME MEASURES: Endothelial in vitro laser confocal microscopy, specular microscopic endothelial cell count, endothelial morphology, visual acuity and intraocular pressure.</p> <p>RESULTS: All patients had normal corneal endothelia prior to routine selective laser trabeculoplasty treatment, where 180 degrees of angle was treated. Approximately an hour afterwards, nearly all patients still had normal specular microscopy and cell counts (2237 ± 211 cells/mm²) but had subtle endothelial changes on slit-lamp examination. These changes were found diffusely across the cornea. The changes were not present at the 6-week follow up and cell counts remained unchanged (2278 ± 242 cells/mm²). Acuity remained unchanged throughout and the patients were not aware of these changes subjectively.</p> <p>CONCLUSIONS: Selective laser trabeculoplasty appears to cause transient corneal endothelial changes in most patients that have no impact on cell count or visual acuity. Further work is required to elucidate the mechanism of this phenomenon and any long-term impact.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
19	Peer reviewed Article	Clinical outcomes Secondary glaucoma	Effects of selective laser trabeculoplasty treatment in steroid-induced glaucoma	Tokuda N, Inoue J, Yamazaki I, Matsuzawa A, Munemasa Y, Kitaoka Y, Takagi H, Ueno S.	Department of Ophthalmology, St Marianna University School of Medicine. Japan.	Nihon Ganka Gakkai Zasshi. 2012 Aug;116(8):751-7.	2012	Japanese	<p>PURPOSE: To evaluate the effectiveness of selective laser trabeculoplasty (SLT) on steroid-induced glaucoma.</p> <p>METHODS: The study included 46 eyes of 41 subjects who were followed up for at least 12 months after SLT. The included 10 eyes with steroid-induced glaucoma, 16 eyes with primary open angle glaucoma (POAG), 10 eyes with pseudoexfoliation glaucoma (PEX.G) and 10 eyes with mixed glaucoma (Mixed. G). The range of the SLT laser was 360 degrees. Intraocular pressure (IOP) before and after SLT, and cumulative survival rate after SLT were determined.</p> <p>RESULTS: Significant decreases in IOP were observed after SLT in the steroid-induced glaucoma group, the POAG group and the PEX.G group. At 12 months after SLT, preoperation IOP decreased by 35.9% (29.9 +/- 7.5 mmHg to 17.9 +/- 2.2 mmHg) in the steroid-induced glaucoma group, 13.2% (20.0 +/- 3.0 mmHg to 17.3 +/- 3.1 mmHg) in the POAG group, 10.7% (21.1 +/- 4.0 mmHg to 18.1 +/- 4.1 mmHg) in the PEX.G group and 6.9% (21.3 +/- 1.9 mmHg to 19.9 +/- 3.4 mmHg) in the Mixed.G group. Cumulative survival rates were 80%, 56.3%, 50.0%, 40.0% in the steroid-induced glaucoma, POAG, PEX.G, and Mixed. G groups, respectively, at 12 months after SLT (Logrank test, p = 0.467).</p> <p>CONCLUSION: These data suggest that SLT increased IOP reduction rates for steroid-induced glaucoma more than for any other group.</p>
20	Peer reviewed Article	Predictive factors	Baseline Factors Predictive of SLT Response: A Prospective Study.	Bruen R, Lesk MR, Harasymowycz P.	Department of Ophthalmology, University of Montreal, Montreal, QC, Canada.	J Ophthalmol. 2012;2012:642869.	2012	English	<p>PURPOSE: To study the response to Selective Laser Trabeculoplasty (SLT) according to baseline medical treatment, angle pigmentation, age, diagnosis (open-angle glaucoma or ocular hypertension), and baseline intraocular pressure (IOP).</p> <p>METHODS: 74 eyes of 74 patients were enrolled in this study. Baseline characteristics were recorded for each patient. IOP in the treated and fellow eyes was measured at baseline, and 1 month, 6 months, and 12 months following SLT. IOP changes in the different groups were compared using two-way ANOVA and Pearson's correlation.</p> <p>RESULTS: The mean age of our cohort was 71 ± 10 years. The mean baseline IOP was 21.5 ± 5 mmHg, and the mean change in IOP from baseline in the treated eye at one year was -4.67 ± 3.40 mmHg. Higher baseline IOP was highly correlated with greater absolute IOP decrease. Prostaglandin analogue use at baseline was shown to be associated with a statistically decreased IOP-lowering response following SLT when corrected for baseline IOP. No significant differences in IOP response were found when comparing groups stratified for age, angle pigmentation, phakic status, gender, or diagnosis.</p> <p>DISCUSSION: The results of this study confirm the finding that higher baseline IOP is a predictor of greater IOP response following SLT, and that pretreatment with prostaglandin analogue therapy is associated with a decreased IOP-lowering response following SLT. The study is limited by the small number of eyes with data available for complete case analysis.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
21	Peer reviewed Article	Clinical Outcomes Adjuvant treatment Complications	Adverse Effects and Short-term Results After Selective Laser Trabeculoplasty (SLT).	Klamann MK, Maier AK, Gonnermann J, Ruokonen PC.	Department of Ophthalmology, University Medicine Charité Berlin, Berlin, Germany.	J Glaucoma. 2012 Aug 14.	2012	English	<p>PURPOSE: To evaluate the risk of adverse effects and to demonstrate short-term results after selective laser trabeculoplasty (SLT) in glaucoma patients.</p> <p>METHODS: Sixty-four eyes of 64 patients with primary open-angle glaucoma, not sufficiently treated with local antiglaucomatous therapy, were included in this prospective study. Intraocular pressure (IOP), anterior chamber cells, anterior chamber flare, and vitreous haze (according to the Standardization of Uveitis Nomenclature Working Group) were examined before SLT, for 24 hours, 14 days, 6 weeks, and 3 months after laser. Furthermore, macular thickness measurements in 9 Early Treatment Diabetic Retinopathy Study subfields, including central subfield, measured by Spectralis OCT were performed. The differences between prelaser and postlaser values were obtained.</p> <p>RESULTS: The average of mean preoperative IOP measurement was 19.1 ± 3.972 mm Hg compared with 12.9 ± 2.513 ($P < 0.001$), 13.2 ± 3.331 ($P < 0.001$), 14.1 ± 2.731 ($P < 0.001$), and 13.9 ± 2.922 mm Hg ($P < 0.001$) 24 hours, 14 days, 6 weeks, and 3 months post-SLT, respectively. The central subfield preoperatively was 278.14 ± 74.355 μm compared with 277.14 ± 71.461 ($P = 0.177$), 277.14 ± 71.461 ($P = 0.354$), 287.34 ± 74.363 ($P = 0.414$), and 257.45 ± 68.431 μm ($P = 0.214$) 24 hours, 14 days, 6 weeks, and 3 months after treatment. Anterior chamber cells, anterior chamber flare, and vitreous haze were not denoted at any time of examination.</p> <p>CONCLUSIONS: In this study, no significant increase in macular thickness and no other adverse effects were present. Furthermore, SLT was found to significantly lower IOP in glaucoma patients in addition to local therapy. In conclusion, SLT has a good ability to reduce IOP with a minor risk of adverse effects.</p>
22	Peer reviewed Article	Clinical Outcomes	Selective laser trabeculoplasty in Egyptian patients with primary open-angle glaucoma.	Abdelrahman AM, Eltanamly RM.	Department of Ophthalmology, Cairo University, Cairo, Egypt.	Middle East Afr J Ophthalmol. 2012 Jul-Sep;19(3):299-303.	2012	English	<p>PURPOSE: To assess the change in intraocular pressure (IOP) in Egyptian patients after selective laser trabeculoplasty (SLT) as a primary or adjunctive treatment for primary open-angle glaucoma (POAG).</p> <p>MATERIALS AND METHODS: One hundred and six eyes with POAG were enrolled in this prospective study. Patients were divided into two groups: recently diagnosed cases with no preoperative medications (group 1) and; patients with confirmed glaucoma on medical therapy (group 2). All patients underwent 360° SLT. Patients were evaluated to 18 months postoperatively. Data were analyzed on postoperative changes in IOP, number of medications and complications. A P-value less than 0.05 was statistically significant.</p> <p>RESULTS: A statistically significant drop in IOP occurred, from 19.55 ± 4.8 mmHg preoperatively, to 16.03 ± 2.8 mmHg postoperatively ($P < 0.001$). Each group had a statistically significant drop in IOP ($P < 0.001$). There was a statistically significant decrease in the number of medications in group 2 from 2.25 ± 0.97 medications preoperatively to 1.0 ± 1.3 medications postoperatively ($P = 0.004$). No serious complications occurred for the duration of the study.</p> <p>CONCLUSION: SLT can be safely and effectively used as primary or adjunctive therapy for the treatment of POAG.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
23	Peer reviewed Article	Science review	The Effect of Selective Laser Trabeculoplasty on Aqueous Humor Dynamics in Patients With Ocular Hypertension and Primary Open-angle Glaucoma.	Beltran-Agullo L, Alaghband P, Obi A, Husain R, Lim KS.	Department of Ophthalmology, St Thomas' Hospital, London, UK.	J Glaucoma. 2012 Jun 4.	2012	English	<p>PURPOSE: To investigate the effect of primary selective laser trabeculoplasty (SLT) on outflow facility and aqueous flow rate in patients with primary open-angle glaucoma or ocular hypertension.</p> <p>METHODS: Eighteen eyes (9 with ocular hypertension and 9 with primary open-angle glaucoma) were included in this prospective noncontrolled study. Patients with intraocular pressures (IOPs) >21 to 35 mm Hg were treated with 360-degree SLT after a baseline measurement of IOP, tonographic outflow facility, and morning aqueous humor production. Electronic Schiøtz tonography was used to measure the outflow facility. The aqueous flow rate was measured by fluorophotometry, and a pneumotonometer was used to measure the IOP. All measurements were repeated at least 3 months after the laser therapy. Paired Student t tests were used to compare aqueous dynamics parameters before and after treatment.</p> <p>RESULTS: The mean age of the study population was 56.7±12.4 years. The IOP decreased significantly (21%) from 24.0±3.0 to 18.9±2.7 mm Hg (P<0.001), whereas tonographic outflow facility increased significantly (55.5%) from 0.09±0.05 to 0.14±0.08 µL/min/mm Hg (P=0.003) 3 months after laser treatment. No statistically significant changes in the production of aqueous humor were found (P=0.46).</p> <p>CONCLUSIONS: Our results show that SLT lowers the IOP by increasing the outflow through the trabecular meshwork, but it has no significant effect on the aqueous flow rate.</p>
24	Peer reviewed Article	Clinical outcomes adjunct Therapy	Effectiveness of selective laser trabeculoplasty in patients with insufficient control of intraocular pressure despite maximum tolerated medical therapy	Hirn C, Zweifel SA, Töteberg-Harms M, Funk J.	Augenklinik, UniversitätsSpital Zürich, Frauenklinikstr. 24, 8091, Zürich	Ophthalmologe. 2012 Jul;109(7):683-90.	2012	German	<p>BACKGROUND: Reduction of intraocular pressure (IOP) is still the primary goal of glaucoma treatment. The aim of this prospective study was to examine the IOP lowering effect of selective laser trabeculoplasty (SLT) in patients on maximum tolerated medical therapy (MTMT), especially with regard to a potential influence of pseudophakia and topical prostaglandin analogues (PGA) on IOP reduction.</p> <p>MATERIAL AND METHODS: A total of 30 patients with a diagnosis of primary open angle glaucoma, normal tension glaucoma and pseudoexfoliative glaucoma with uncontrolled IOP despite MTMT underwent SLT treatment circumferentially over 360°. Follow-up visits were conducted 1 day after SLT and then 1, 3, 6, 9, and 12 months post-treatment. The initial medication was continued unchanged for 3 months.</p> <p>RESULTS: Median follow-up was 11.97±3.1 months, mean IOP at baseline was 19.60±4.69 mmHg, mean IOP reduction was -19.95±17.14% 1 month after and -14.07±23.57% 12 months after SLT (p<0.001 and p=0.003, respectively). Patients with higher baseline IOP had greater reduction of IOP after SLT (R(2)=0.482, p<0.001). Phakic patients had a significantly greater IOP reduction compared to pseudophakic patients (-4.55±4.45 mmHg and +2.75±6.75 mmHg, respectively, p=0.010). Patients without PGA had a statistically insignificant greater IOP reduction compared to patients with PGA (-7.40±4.72 mmHg and -2.48±5.22 mmHg, respectively, p=0.066) and four patients needed additional surgery to lower IOP.</p> <p>CONCLUSION: Even in patients already on maximum IOP lowering medication, SLT has the potential to significantly reduce IOP up to 1 year after treatment. The IOP reduction is most pronounced in phakic eyes with high preoperative IOP.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
25	Peer reviewed Article	Predictive factors Clinical Outcomes	Effect of central corneal thickness on the long-term outcome of selective laser trabeculoplasty as primary treatment for ocular hypertension and primary open-angle glaucoma.	Shazly TA, Latina MA, Dagianis JJ, Chitturi S.	Department of Ophthalmology, Massachusetts Eye and Ear Infirmary/ Harvard Medical School, Boston, MA, USA.	Cornea. 2012 Aug;31(8):883-6.	2012	English	<p>PURPOSE: To determine if central corneal thickness (CCT) impacts the intraocular pressure (IOP)-lowering effect of selective laser trabeculoplasty (SLT) in patients with ocular hypertension (OHT) and primary open-angle glaucoma (POAG). METHODS: A retrospective chart review of consecutive patients, who underwent SLT as primary treatment for OHT and POAG, between 2002 and 2005, was performed. Partial correlation analysis was performed to correlate the CCT to the percentage of IOP reduction at 3 to 30 months after SLT. Independent samples t test was performed to compare mean percentage of IOP reduction in eyes with CCT less than 555 μm versus CCT 555 μm or greater.</p> <p>RESULTS: Eighty eyes of 47 patients were identified. The partial correlation coefficient value between the CCT and percentage of IOP reduction after SLT at 3 months was -0.253 (P = 0.025), at 12 months it was -0.22 (P = 0.049), and at 30 months it was 0.301 (P = 0.007). Independent samples t test showed that the mean percentage of IOP reduction in eyes with thinner corneas (CCT < 555 μm) was greater than that in thicker corneas (CCT \geq 555 μm) at 3-, 6-, 9-, 12-, and 30-month post-SLT (P < 0.05).</p> <p>CONCLUSIONS: In patients with POAG and OHT, percentage of IOP reduction after SLT was significantly greater in eyes with thinner corneas (CCT < 555 μm). These findings indicate that patients treated with SLT as primary therapy who had thinner corneas demonstrated better IOP control for at least 30 months after SLT.</p>
26	Peer reviewed Article	Clinical Outcomes	The influence of topical prostaglandin analogues in inflammation after selective laser trabeculoplasty treatment	Ayala M, Chen E.	Department of Glaucoma, St. Erik Eye Hospital, Karolinska Institutet, Stockholm, Sweden	J Ocul Pharmacol Ther. 2012 Apr;28(2):118-22.	2012	English	<p>PURPOSE: Reducing intraocular pressure (IOP) seems to be the only treatment that slows progression in glaucoma. The IOP can be decreased by pharmaceutical treatment, laser [selective laser trabeculoplasty (SLT)] treatment, or surgery. Prostaglandin analogues have been postulated to share action mechanisms with SLT and to possibly diminish the effects of SLT treatment. The aim of the current study was to investigate the effects of prostaglandin analogues in inflammation and IOP reduction after SLT treatment.</p> <p>METHODS: Prospective nonrandomized study. One hundred and eighteen patients were included in the study. Inclusion criteria: Glaucoma (open-angle or pseudoexfoliation glaucoma) patients who will be treated with SLT. Inflammation was measured with a laser flare meter (Kowa FM-500). Measurements were made before SLT and then 2 h, 1 week, and 1 month after SLT treatment. IOP was also checked at the same time intervals. The SLT treatment was performed over 90°. All patients were divided into two groups: those receiving prostaglandins analogues and those treated with nonprostaglandin analogues.</p> <p>RESULTS: Inflammation before and after SLT showed no significant difference between the groups at all the time intervals studied (t-test, before: P=0.16; 2 h: P=0.14; 1 week: P=0.12; and 1 month: P=0.36). IOP reduction showed no significant difference between the groups (t-test, P=0.31).</p> <p>CONCLUSIONS: SLT treatment effects do not seem to be influenced by the use of prostaglandin analogues.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
27	Peer reviewed Article	SLT vs ALT	Argon versus selective laser trabeculoplasty in younger patients: 2-year results	Liu Y, Birt CM	Faculty of Medicine, University of Ottawa	J Glaucoma. 2012 Feb;21(2):112-5	2012	English	<p>OBJECTIVE: To compare the effectiveness of argon laser trabeculoplasty (ALT) and selective laser trabeculoplasty (SLT) in lowering intraocular pressure (IOP) in younger patients (age 60 or less).</p> <p>METHODS: This was a prospective randomized control trial. Forty-two young patients (age 29 to 60 y) had 1 eye randomized to ALT (n=22) or SLT (n=20). IOP was measured before laser and 1 hour, 1 day, 6 weeks, 3 months, every 3 months until 2 years, and then yearly postlaser. Chi-square analysis and Student t test were used to determine statistical significance. RESULTS: The mean IOP before treatment was 21.9 mm Hg for ALT and 19.1 mm Hg for SLT with no statistical difference between the groups ($P>0.05$). At 2 years, 86.4% of ALT and 75.0% of SLT eyes required no further surgical intervention (laser trabeculoplasty or trabeculectomy). During the same time period, there was a statistically significant IOP decrease of 11.1% after ALT ($P=0.01$) and 7.7% after SLT ($P=0.01$) with no statistical difference between the lasers ($P>0.05$). CONCLUSIONS: In younger patients, both ALT and SLT have a significant ocular hypotensive effect 2 years after treatment, with no differences in outcome identified between the laser modalities.</p>
28	Peer reviewed Article	Clinical Outcomes Secondary Glaucoma	Selective laser trabeculoplasty in the treatment of open-angle glaucoma	Koucheki B, Hashemi H	Noor Ophthalmology Research Center, Noor Eye Hospital, Tehran University of Medical Sciences, Tehran, Iran	J Glaucoma. 2012 Jan;21(1):65-70	2012	English	<p>PURPOSE: To determine the effect of selective laser trabeculoplasty (SLT) on different types of open-angle glaucoma (OAG) in terms of intraocular pressure (IOP).</p> <p>METHODS AND MATERIALS: In this prospective, nonrandomized, interventional study, patients with OAG, unresponsive to maximum tolerable antiglaucoma medication, were enrolled. One thirty six eyes were studied. Distribution of glaucoma type was 91 primary OAG eyes (POAG, 66.9%), 22 pseudoexfoliative glaucoma (PEX, 16.2%) eyes, and 23 pigmentary glaucoma (PG, 16.9%) eyes. Main outcome measures were IOP and number of antiglaucoma medications used before operation, at 1 day, at 1 week, and at 1 to 18 months after surgery. Using the standard approach 360-degree SLT was done.</p> <p>RESULTS: The mean follow-up was 16.6 ± 4.3 months. The mean preoperative IOP was 22.0 ± 3.7 mm Hg, and reduced to 18.3 ± 3.7 mm Hg at last visit. The overall mean IOP decrease was 3.6 ± 2.6 mm Hg (16.3%) on the last visit compared with before surgery, indicating a reduction of 16.7% in POAG, 16.6% in PEX, and 14.5% in PG.</p> <p>Comparison of IOP values at 6 and 16 months showed an increase of 0.5 and 2.7 mm Hg in total sample and PG group. IOP reduction was significantly less among diabetic patients.</p> <p>CONCLUSIONS: SLT resulted in a significant IOP reduction of 16.3% at 16 months after surgery. The level of IOP reduction did not vary in POAG, PEX, and PG groups. A significant increase in IOP was observed in PG group after 6 months. The procedure seemed least effective in diabetic patients.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
29	Peer reviewed Article	Clinical Outcomes Adjunct Therapy	Clinical results of selective laser trabeculoplasty in open-angle glaucoma in Japanese eyes: comparison of 180 degree with 360 degree SLT.	Shibata M, Sugiyama T, Ishida O, Ueki M, Kojima S, Okuda T, Ikeda T	Department of Ophthalmology, Osaka Medical College, Daigaku-machi, Takatsuki-shi, Osaka, Japan	J Glaucoma. 2012 Jan;21(1):17-21	2012	English	<p>PURPOSE: To evaluate the efficacy of selective laser trabeculoplasty (SLT) in the adjunctive treatment of medically diagnosed open-angle glaucoma and to compare the difference in intraocular pressure (IOP) lowering effects between 180-degree and 360-degree SLT.</p> <p>METHODS: This study is a retrospective consecutive chart review of open-angle glaucoma patients who had undergone first-time SLT from January of 2005 to July of 2007. All the patients had primary open-angle glaucoma or pseudoexfoliation glaucoma under medical treatment and followed for at least 3 months after the procedure. The IOP reduction and treatment success were compared with the 2 treatment types.</p> <p>RESULTS: Twenty-nine patients underwent 180-degree SLT (35 eyes) and 25 patients underwent 360-degree SLT (34 eyes). The average follow-up was 19.5 months (range 3 to 36) for 180-degree group and 17.9 months (range 3 to 36) for 360-degree group. During the follow-up period, the 360-degree SLT group showed significantly lower posttreatment IOP at each follow-up point relative to pretreatment IOP, and its IOP reduction rate stayed statistically higher than the 180-degree group. We found a positive correlation between the pretreatment IOP and the IOP reduction rate for 360-degree SLT. The lower the pretreatment IOP was, the lower IOP reduction rate became. A Kaplan-Meier survival analysis showed higher success rates after 360-degree SLT than after 180-degree SLT.</p> <p>CONCLUSIONS: The 360-degree SLT was shown to be more effective than 180-degree SLT for intermediate term reduction in IOP of Japanese patients with open-angle glaucoma as an adjunctive treatment protocol.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
30	Peer reviewed Article	Secondary Glaucoma Clinical Outcomes	Prophylactic selective laser trabeculoplasty in the prevention of intraocular pressure elevation after intravitreal triamcinolone acetonide injection	Bozkurt E, Kara N, Yazici AT, Yuksel K, Demirok A, Yilmaz OF, Demir S	Beyoglu Eye Research and Education Hospital, Istanbul, Turkey	Am J Ophthalmol. 2011 Dec;152(6):976-981	2011	English	<p>PURPOSE: To evaluate the prophylactic efficacy of selective laser trabeculoplasty for preventing an increase in intraocular pressure (IOP) after intravitreal triamcinolone acetonide injection. DESIGN: Prospective, comparative, interventional case series.</p> <p>METHODS: We studied 31 eyes with a baseline IOP of 21 mm Hg or more of 31 patients for which intravitreal triamcinolone acetonide injection was planned for diabetic macular edema. The patients were divided into 2 groups, a study group and control group. The study group comprised 15 eyes of 15 patients that underwent selective laser trabeculoplasty a mean of 8.3 ± 4.1 days before intravitreal triamcinolone acetonide injection. The control group comprised 16 eyes of 16 patients who underwent only intravitreal triamcinolone acetonide injection. Main outcomes measures were mean IOP and number of patients requiring antiglaucomatous therapy.</p> <p>RESULTS: Mean baseline IOP was 21.6 ± 0.9 mm Hg in the study group and 21.5 ± 0.8 mm Hg in the control group ($P = .98$). Mean IOP at 1 day after injection was 17.0 ± 2.0 mm Hg in the study group and 19.5 ± 4.3 mm Hg in the control group ($P = .23$). Mean IOP at 1 week after injection was 16.9 ± 1.7 mm Hg and 18.4 ± 4.0 mm Hg, respectively ($P = .49$); mean IOP at 1 month after injection was 16.4 ± 1.5 mm Hg and 20.8 ± 5.6 mm Hg, respectively ($P = .003$); mean IOP at 3 months after injection was 15.8 ± 2.5 mm Hg and 18.3 ± 5.5 mm Hg, respectively ($P = .01$); and mean IOP at 6 months after injection was 15.7 ± 1.4 mm Hg and 17.1 ± 1.5 mm Hg, respectively ($P = .03$). The number of patients requiring antiglaucomatous therapy during follow-up was 0 of 15 eyes in the study group and 8 of 16 eyes in the control group ($P = .001$).</p> <p>CONCLUSIONS: The IOP elevation after intravitreal triamcinolone acetonide injection may be prevented by performing selective laser trabeculoplasty before intravitreal triamcinolone acetonide injection, especially in cases with a baseline IOP of 21 mm Hg or more.</p>
31	Peer reviewed Article	Review	Laser trabeculoplasty for open-angle glaucoma: a report by the american academy of ophthalmology	Samples JR, Singh K, Lin SC, Francis BA, Hodapp E, Jampel HD, Smith SD	Department of Ophthalmology, Oregon Health and Sciences University, Portland, Oregon, USA	Ophthalmology. 2011 Nov;118(11):2296-302	2011	English	<p>OBJECTIVE: To provide an evidence-based summary of the outcomes, repeatability, and safety of laser trabeculoplasty for open-angle glaucoma.</p> <p>METHODS: A search of the peer-reviewed literature in the PubMed and the Cochrane Library databases was conducted in June 2008 and was last repeated in March 2010 with no date or language restrictions. The search yielded 637 unique citations, of which 145 were considered to be of possible clinical relevance for further review and were included in the evidence analysis.</p> <p>RESULTS: Level I evidence indicates an acceptable long-term efficacy of initial argon laser trabeculoplasty for open-angle glaucoma compared with initial medical treatment. Among the remaining studies, level II evidence supports the efficacy of selective laser trabeculoplasty for lowering intraocular pressure for patients with open-angle glaucoma. Level III evidence supports the efficacy of repeat use of laser trabeculoplasty.</p> <p>CONCLUSIONS: Laser trabeculoplasty is successful in lowering intraocular pressure for patients with open-angle glaucoma. At this time, there is no literature establishing the superiority of any particular form of laser trabeculoplasty. The theories of action of laser trabeculoplasty are not elucidated fully. Further research into the differences among the lasers used in trabeculoplasty, the repeatability of the procedure, and techniques of treatment is necessary.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
32	Peer reviewed Article	Clinical Outcomes Long Term Follow up	Long term effects on the lowering of intraocular pressure: selective laser or argon laser trabeculoplasty?	Bovell AM, Damji KF, Hodge WG, Rock WJ, Buhrmann RR, Pan YI	University of Ottawa Eye Institute, Ottawa, Ontario	Can J Ophthalmol. 2011 Oct;46(5):408-13	2011	English	<p>OBJECTIVE: Selective laser trabeculoplasty (SLT) and argon laser trabeculoplasty (ALT) are used to lower intraocular pressure (IOP) in patients with open-angle glaucoma (OAG). We report long-term follow-up data comparing SLT to ALT. DESIGN: Follow-up of prospective randomized clinical trial.</p> <p>PARTICIPANTS: Patients with glaucoma from the practices of three ophthalmologists at the University of Ottawa.</p> <p>METHODS: We randomized 176 eyes of 152 patients with uncontrolled IOP on maximal tolerated medical therapy (MTMT, with or without previous ALT) to undergo either SLT or ALT. Data were available for 142 eyes at 3 years, 134 eyes at 4 years, and 120 eyes at 5 years. The primary outcome was change in IOP from pretreatment baseline. RESULTS: Comparison of baseline parameters was similar in the two groups. Lowering of IOP were similar at 3 years (SLT -6.7 ± 7.1 vs ALT -6.1 ± 5.1); at 4 years (SLT 7.0 ± 7.7 vs ALT -6.3 ± 5.0); and at 5 years (SLT -7.4 ± 7.3 vs ALT -6.7 ± 6.6). There was no statistically significant change in IOP in either of the two groups. Medication changes were equivalent in each group. A number of interventions were required in both groups, cumulatively, over the 5-year follow-up period (49 SLT and 33 ALT). Survival analysis indicated that the time to 50% failure in each group was approximately 2 years.</p> <p>CONCLUSIONS: The IOP-lowering effect of SLT and ALT was similar over 5 years in this group of patients with open-angle glaucoma on MTMT.</p>
33	Peer reviewed Article	Secondary Glaucoma Clinical Outcomes	Selective laser trabeculoplasty in uncontrolled pseudoexfoliation glaucoma	Goldenfeld M, Geyer O, Segev E, Kaplan-Messas A, Melamed S	The Sam Rothberg Glaucoma Center, Goldschleger Eye Institute, Sheba Medical Center, Tel-Hashomer, Israel	Ophthalmic Surg Lasers Imaging. 2011 Sep-Oct;42(5):390-3	2011	English	<p>BACKGROUND AND OBJECTIVE: To assess the efficacy and safety of selective laser trabeculoplasty (SLT) in uncontrolled pseudoexfoliation glaucoma (PEXG). PATIENTS AND METHODS: Fifty-seven eyes (57 patients) with uncontrolled PEXG and intra-ocular pressure (IOP) greater than 23 mm Hg underwent SLT. All received ophthalmic evaluation preoperatively and at intervals postoperatively. IOP was measured at 1 hour, 1 day, 1 week, and 1, 3, 6, and 12 months postoperatively. During follow-up, patients were treated with topical anti-glaucoma medications as necessary.</p> <p>RESULTS: One year postoperatively, mean IOP in all patients decreased from 26.01 ± 2.5 to 17.8 ± 2.8 mm Hg (31.5%; $P < .001$). Mean medications per patient decreased from 2.8 to 2.3. Complications included conjunctival redness and infection within 1 day postoperatively in 30 eyes (67%). One hour after SLT treatment, an increase in IOP greater than 5 mm Hg was detected in two eyes (3.5%) and resolved within 24 hours with topical medication.</p> <p>CONCLUSION: SLT is safe and effective in patients with PEXG.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
34	Peer reviewed Article	SLT vs ALT Predictive factors	Laser trabeculoplasty: an investigation into factors that might influence outcomes.	Tzimis V, Tze L, Ganesh J, Muhsen S, Kiss A, Kranemann C, Birt CM	Department of Ophthalmology & Vision Sciences, University of Toronto, Ont., Canada	Can J Ophthalmol. 2011 Aug;46(4):305-9	2011	English	<p>OBJECTIVE: To examine the effectiveness of argon (ALT) or selective (SLT) laser trabeculoplasty (LTP) in lowering intraocular pressure (IOP) and to determine whether patient-related factors had any impact on outcome.</p> <p>DESIGN: Retrospective review. PARTICIPANTS: 500 patients treated with LTP over 14 years.</p> <p>METHODS: This study was conducted at Sunnybrook Health Sciences Centre, University of Toronto. Five patient-related characteristics were used as dependent variables-age, race, gender, pseudophakic status, and pseudoexfoliation. IOP decrease and treatment failure at 12 months were the main outcome variables.</p> <p>RESULTS: 500 eyes of 500 patients were included, 350 after ALT and 150 after SLT. The mean \pm standard deviation baseline IOP was significantly higher in the patients treated by ALT than in those treated by SLT (24.2 ± 5.4 versus 22.2 ± 4.6, $p < 0.0001$) at baseline but not at 1 year (19.6 ± 5.1 versus 19.5 ± 6.1, $p = 0.41$). When the final IOP was examined by multiple regression analysis, there was a significant effect in favor of ALT over SLT ($p = 0.03$) and for patients with higher baseline IOPs ($p < 0.0001$). No significant effect was found for any of the demographic subgroupings. However, when the outcome variable was success or failure, only the baseline IOP remained significant.</p> <p>CONCLUSIONS: Specific patient characteristics do not significantly influence LTP outcome after 12 months of follow-up. The most powerful predictor of either final IOP or clinical success was a higher baseline IOP, but ALT may have a better ability to lower IOP.</p>
35	Peer reviewed Article	Clinical Outcomes Adjunct Therapy	Comparison of selective laser trabeculoplasty success in patients treated with either prostaglandin or timolol/dorzolamide fixed combination	Kara N, Altan C, Satana B, Altinkaynak H, Bozkurt E, Demirok A, Yilmaz OF	Beyoglu Eye Research and Education Hospital, Istanbul, Turkey	J Ocul Pharmacol Ther. 2011 Aug;27(4):339-42	2011	English	<p>PURPOSE: The purpose of this study was to compare the efficacy of selective laser trabeculoplasty (SLT) in eyes of patients with open-angle glaucoma receiving either a prostaglandin (PG) analog or a timolol/dorzolamide fixed combination (TDFC). METHODS: In this retrospective study, we analyzed 48 eyes of 35 patients who underwent SLT for open-angle glaucoma receiving either a PG analog ($n=20$) or a TDFC ($n=28$). Mean decrease in intraocular pressure (IOP) and success rates were compared between patients treated with PG and those treated with TDFC. Success was defined as an IOP reduction of at least 20% at postoperative 1 year.</p> <p>RESULTS: The mean decrease in IOP in eyes treated with PG and in eyes treated with TDFC were 4.1 ± 3.1 and 4.6 ± 3.5 at 1 week ($P=0.579$), 5.3 ± 3.4 and 5.7 ± 2.0 at 1 month ($P=0.485$), 5.2 ± 3.1 and 5.5 ± 2.5 at 3 months ($P=0.271$), 5.0 ± 3.1 and 6.1 ± 2.5 and at 6 months ($P=0.044$), and 4.7 ± 3.1 and 6.5 ± 2.9 at 1 year ($P=0.017$), respectively. The success rate at postoperative 1 year was 50.0% (standard deviation± 16) in eyes receiving PG and 78.6% (standard deviation± 11) in eyes receiving TDFC ($P=0.041$).</p> <p>CONCLUSION: This study shows that the SLT seems to be more effective in TDFC users than PG analog users.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
36	Peer reviewed Article	Clinical Outcomes Complications	Inflammation assessment after selective laser trabeculoplasty (SLT) treatment	Ayala M, Landau Högbeck I, Chen E	Glaucoma department, St Eriks Eye Hospital, Karolinska Institutet, Stockholm, Sweden	Acta Ophthalmol. 2011 Jun;89(4):e306-9	2011	English	<p>PURPOSE: Selective laser trabeculoplasty (SLT) appears to be a safe and effective method to lower intraocular pressure (IOP). The exact mechanism of action for reducing IOP and inflammation levels is not known. The aim of this study was to assess inflammation after SLT treatment.</p> <p>METHODS: Forty patients (80 eyes) were included in the study. Inclusion criteria: Glaucoma (pigmentary and pseudoexfoliative glaucoma)/ocular hypertension patients that will be treated with SLT in just one eye, both with and without eye-drops. Exclusion criteria: patients suffering from ocular or systemic inflammatory diseases are treated with cortisone or immunosuppressive drugs. Inflammation was measured in two different ways: (i) clinically with a slit lamp and classified 0-4; (ii) objectively with a 'Laser flare meter (Kowa FM 500)'. Measurements were taken before SLT, 2 hr, 1 week and 1 month after SLT treatment, both eyes were evaluated. IOP was also checked in the same way. SLT treatment was performed in 90°.</p> <p>RESULTS: Inflammation before and after SLT showed no significant difference measured clinically with slit lamp and objectively with the laser flare meter among the groups. No inflammation or IOP reduction was found in the untreated eyes. No IOP spikes after SLT treatment were found.</p> <p>CONCLUSION: Selective laser trabeculoplasty treatment seems not to induce inflammation in the anterior chamber when 90° was treated. SLT effectively and safely lowers IOP and might be considered as primary therapy.</p>
37	Peer reviewed Article	Clinical Outcomes Primary therapy Predictive factors	Intraocular pressure response to selective laser trabeculoplasty in the first treated eye vs the fellow eye	Shazly TA, Latina MA	Department of Ophthalmology, Assiut University Hospital, Assiut, Egypt	Arch Ophthalmol. 2011 Jun;129(6):699-702	2011	English	<p>OBJECTIVE: To determine if the intraocular pressure (IOP) response to selective laser trabeculoplasty (SLT) in one eye predicts long-term response to SLT in the fellow eye. METHODS: A retrospective medical record review was performed of patients who underwent SLT as primary treatment in both eyes and who completed at least 30 months of follow-up visits. Pearson product moment correlation analysis was performed to determine correlations between the 3-month percentage of IOP reduction in the first treated eye and long-term percentages of IOP reduction in the fellow eye. RESULTS: Medical records of 80 eyes in 40 patients were reviewed. In patients with ocular hypertension, the 3-month percentage of IOP reduction in the first treated eye correlated strongly with long-term percentages of IOP reduction in the fellow eye ($r > 0.652$). In patients with primary open-angle glaucoma, the 3-month percentage of IOP reduction in the first treated eye correlated moderately with percentages of IOP reduction in the fellow eye up to 9 months ($r > 0.367$). CONCLUSIONS: In patients with ocular hypertension, the 3-month percentage of IOP reduction in the first treated eye in response to SLT was predictive of response in the fellow eye up to 30 months. In patients with primary open-angle glaucoma, the 3-month percentage of IOP reduction in the first treated eye in response to SLT was predictive of response in the fellow eye up to 9 months.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
38	Peer reviewed Article	Basic Science	Selective laser trabeculoplasty induced changes in the thickness of ciliary body and iris evaluated by ultrasound biomicroscopy	Aykan U, Salcan I, Yildirim O, Ersanli D	Department of Ophthalmology, GATA Haydarpasa Training Hospital, Uskudar, Istanbul, Turkey	Graefes Arch Clin Exp Ophthalmol. 2011 Jun;249(6):887-94	2011	English	<p>BACKGROUND: Selective laser trabeculoplasty (SLT) is widely used for the treatment of glaucoma. The main target tissue of this treatment modality is trabecular meshwork. We aimed to detect the SLT-induced changes in the thickness of ciliary body (CBT) and iris (IT), quantitatively.</p> <p>METHODS: Thirty-one patients treated by SLT were examined by ultrasound biomicroscopy (UBM) at different locations of ciliary body and iris at four quadrants, before and after (3rd, 7th, and 30th days) SLT. The IT was measured at various locations; 500 μm anterior to the scleral spur (IT(1)), 2 mm from the iris root (IT(2)) and near the pupillary edge where the iris thickness was maximum (IT(3)) at four quadrants. The CBT at positions 1 and 2 mm posterior to the scleral spur were measured (CBT(1-2)). Additionally, intraocular pressure (IOP) levels were measured in all visits and post-laser 1 h.</p> <p>RESULTS: There were statistically significant higher CBT values at 3rd and 7th-day measurements in the study compared to pre-treatment levels (p</p>
39	Peer reviewed Article	Complications Case report	Corneal edema and haze after selective laser trabeculoplasty	Regina M, Bunya VY, Orlin SE, Ansari H	Scheie Eye Institute, University of Pennsylvania, Philadelphia, PA, USA	J Glaucoma. 2011 Jun-Jul;20(5):327-9	2011	English	<p>PURPOSE: To report 2 cases of corneal edema, haze, and thinning in patients after undergoing selective laser trabeculoplasty.</p> <p>METHODS: Selective laser trabeculoplasty was performed for the treatment of primary open-angle glaucoma on 2 patients who subsequently developed corneal stromal haze within 24 to 48 hours of the procedure. RESULTS: The patients were treated with topical steroids for several weeks. Although their corneal edema resolved, both patients were left with residual corneal scarring and thinning. One patient had a significant hyperopic shift.</p> <p>CONCLUSIONS: Corneal edema, haze, and thinning after selective laser trabeculoplasty is an extremely rare event, with only 2 other cases reported in the literature. Although certain causes are postulated to play a role in this complication, it is not yet understood what may predispose a patient to corneal changes as a result of this laser procedure.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
40	Peer reviewed Article	Primary Therapy SLT vs Meds	Selective Laser Trabeculoplasty Versus Medical Therapy as Initial Treatment of Glaucoma: A Prospective, Randomized Trial	Katz LJ, Steinmann WC, Kabir A, Molineaux J, Wizov SS, Marcellino G	Glaucoma Service, Wills Eye Institute, Jefferson Medical College, Philadelphia, PA, Department of Internal Medicine, University of Missouri, Columbia, MO, Lumenis, Inc., Santa Clara, CA, Miller School of Medicine, University of Miami, Miami, Florida.	J Glaucoma. 2011 May 3. [Epub ahead of print]	2011	English	<p>PURPOSE: To compare outcomes of selective laser trabeculoplasty (SLT) with drug therapy for glaucoma patients in a prospective randomized clinical trial.</p> <p>PATIENTS AND METHODS: Sixty-nine patients (127 eyes) with open-angle glaucoma or ocular hypertension were randomized to SLT or medical therapy. Target intraocular pressure (IOP) was determined using the Collaborative Initial Glaucoma Treatment Study formula. Patients were treated with SLT (100 applications 360 degrees) or medical therapy (prostaglandin analog). Six visits over 1 year followed initial treatment. If target IOP range was not attained with SLT, additional SLT was the next step, or in the medical arm additional medications were added. Primary outcome: IOP; secondary: number of steps.</p> <p>RESULTS: Sixty-nine patients were treated. Data collection terminated with 54 patients reaching 9 to 12-months follow-up. Twenty-nine patients were in the SLT group, 25 patients in the medical group. Baseline mean IOP for all eyes was 24.5 mm Hg in the SLT group, 24.7 mm Hg in the medical group. Mean IOP (both eyes) at last follow-up was 18.2 mm Hg (6.3 mm Hg reduction) in the SLT arm, 17.7 mm Hg (7.0 mm Hg reduction) in the medical arm. By last follow-up, 11% of eyes received additional SLT, 27% required additional medication. There was not a statistically significant difference between the SLT and medication groups.</p> <p>CONCLUSIONS: IOP reduction was similar in both arms after 9 to 12-months follow-up. More treatment steps were necessary to maintain target IOP in the medication group, although there was not a statistically significant difference between groups. These results support the option of SLT as a safe and effective initial therapy in open-angle glaucoma or ocular hypertension.</p>
41	Peer reviewed Article	Clinical Outcomes Adjunct Therapy	SLT and adjunctive medical therapy: a prediction rule analysis	Martow E, Hutnik CM, Mao A	Department of Ophthalmology, Ivey Eye Institute, St Joseph's Hospital, Lawson Health Research Institute, University of Western Ontario, Ontario, Canada	J Glaucoma. 2011 Apr-May;20(4):266-70	2011	English	<p>PURPOSE: To investigate if specific classes of antiglaucoma medications have an influence on selective laser trabeculoplasty (SLT) success.</p> <p>METHODS: This retrospective prediction rule analysis investigated 120 eyes from 120 patients diagnosed with either open angle glaucoma or ocular hypertension, who underwent SLT treatment. Treatment success was defined as $\geq 20\%$ intraocular pressure (IOP) reduction at 3 and 6 months after the treatment date. Multivariate logistic regression analyses were performed to determine success predictors.</p> <p>RESULTS: Pre-SLT IOP (up to 4 wk before SLT therapy) was the only independent predictor for $\geq 20\%$ IOP reduction with an odds ratio of 1.30 when controlling for pre-SLT antiglaucoma drops. The area under receiver operator characteristic curve was 0.777.</p> <p>CONCLUSIONS: Topical medications do not adversely, nor favorably, affect SLT success. SLT efficacy is positively associated with the degree of IOP elevation before SLT treatment. Pigmentation of the anterior chamber angle, class of antiglaucoma medications, diabetes, sex, corneal thickness, pseudophakia, diagnosis, washout of eye drops, and previous argon laser trabeculoplasty treatment are not associated with SLT treatment efficacy.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
42	Peer reviewed Article	Clinical Outcomes Secondary Glaucoma	Comparison of selective laser trabeculoplasty (SLT) in primary open angle glaucoma and pseudoexfoliation glaucoma	Ayala M, Chen E	Glaucoma Department, St. Erik Eye Hospital, Karolinska Institutet, Stockholm, Sweden	Clin Ophthalmol. 2011;5:1469-73	2011	English	<p>BACKGROUND AND OBJECTIVE: The aim of the present study was to compare intraocular pressure (IOP) reduction and inflammation after selective laser trabeculoplasty (SLT) treatment in patients suffering from primary open angle (POAG) vs pseudoexfoliative (PXFG) glaucoma.</p> <p>STUDY DESIGN/PATIENTS AND METHODS: Sixty patients (60 eyes) participated in the study. Glaucoma patients (POAG or PXFG) scheduled for treatment with SLT were included. Inflammation was measured with a laser flare meter (Kowa FM-500). Measurements were made before SLT and 2 hours, 1 week, and 1 month after SLT treatment. IOP was also checked at the same time intervals. RESULTS: Inflammation after SLT showed no significant difference between the groups (t-test, before: $P = 0.16$; 2 hours: $P = 0.14$; 1 week: $P = 0.12$; and 1 month: $P = 0.36$). IOP reduction was the same in both groups (t-test, $P = 0.27$).</p> <p>CONCLUSION: SLT safely reduces IOP in both POAG and PXFG. Pseudoexfoliation does not seem to be a risk factor for post-laser complications.</p>
43	Peer reviewed Article	SLT vs ALT	Pattern of intraocular pressure reduction following laser trabeculoplasty in open-angle glaucoma patients: comparison between selective and nonselective treatment.	Almeida ED Jr, Pinto LM, Fernandes RA, Prata TS	Department of Ophthalmology, Federal University of São Paulo, São Paulo, Brazil	Clin Ophthalmol. 2011;5:933-6	2011	English	<p>OBJECTIVE: To compare the pattern of intraocular pressure (IOP) reduction following selective laser trabeculoplasty (SLT) versus argon laser trabeculoplasty (ALT) in open-angle glaucoma (OAG) patients, and to investigate the ability of initial IOP reduction to predict mid-term success.</p> <p>METHODS: A prospective, nonrandomized, interventional case series was carried out. Consecutive uncontrolled OAG glaucoma patients underwent SLT or ALT; the same preoperative medical regimen was maintained during follow-up. Data collected included age, type of OAG, pre- and postoperative IOP, number of glaucoma medications, and surgical complications. Post-treatment assessments were scheduled at day 1 and 7 and months 1, 3, and 6.</p> <p>RESULTS: A total of 45 patients (45 eyes) were enrolled [SLT group ($n = 25$); ALT group ($n = 20$)]. Groups were similar for age, baseline IOP, and number of glaucoma medications ($P \geq 0.12$). We found no significant differences in mean IOP reduction between SLT (5.1 ± 2.5 mmHg; 26.6%) and ALT (4.4 ± 2.8 mmHg; 22.8%) groups at month 6 ($P = 0.38$). Success rates (IOP ≤ 16 mmHg and IOP reduction $\geq 25\%$) at last follow-up visit were similar for SLT (72%) and ALT (65%) groups ($P = 0.36$). Comparing the pattern of IOP reduction (% of IOP reduction at each visit) between groups, we found a greater effect following SLT compared with ALT at day 7 ($23.7\% \pm 13.7\%$ vs $8.1\% \pm 9.5\%$; $P < 0.001$). No significant differences were observed at other time points ($P \geq 0.32$). Additionally, the percentage of IOP reduction at day 7 and at month 6 were significantly correlated in the SLT group ($R(2) = 0.36$; $P < 0.01$), but not in the ALT group ($P = 0.89$). Early postoperative success predicted late success in most SLT cases (82%). No serious complications were observed.</p> <p>CONCLUSION: Although mid-term results suggest SLT and ALT as effective and equivalent alternatives, a greater initial IOP reduction was observed following SLT. In addition, the initial IOP reduction was a good predictor of mid-term success in patients undergoing SLT, but not ALT.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
44	Peer reviewed Article	Clinical Outcomes	Predictive factors of success in selective laser trabeculoplasty (SLT) treatment	Ayala M, Chen E	Glaucoma Department, St. Erik Eye Hospital, Karolinska Institutet, Stockholm, Sweden	Clin Ophthalmol. 2011;5:573-6	2011	English	<p>PURPOSE: Glaucoma is a progressive optic neuropathy that may lead to blindness. Reducing intraocular pressure (IOP) is the only known treatment to slow progression in glaucoma. IOP can be reduced by pharmaceutical treatment, laser and surgery. The aim of the present study was to assess predictive factors of success after selective laser trabeculoplasty (SLT) treatment. METHODS: We used a retrospective chart review of eyes that underwent SLT between January 1, 2005 and December 31, 2005. The dependent variable was time to failure after SLT treatment. Failure after SLT was defined as any changes in the medical treatment, and/or a new SLT treatment was performed and/or the patient was sent for surgery. All patients were treated with 90° SLT. A multivariate regression analysis was performed to assess correlation between time to failure after SLT and age, gender, IOP before treatment, number of medications used, SLT number, amount of spots, laser energy used, grade of angle, pigmentation and diagnosis. RESULTS: 120 eyes of 120 patients were identified. The average time to failure after SLT was 18 months. The predictive factors identified were: age, IOP before SLT and dose. CONCLUSION: Predictive factors identified in our study were high baseline IOP, age and amount of laser energy used. Our study confirms previous results about baseline IOP as a predictive factor.</p>
45	Peer reviewed Article	Clinical Outcomes	Effect of prior cataract surgery on the long-term outcome of selective laser trabeculoplasty	Shazly TA, Latina MA, Dagianis JJ, Chitturi S	Ophthalmology, Massachusetts Eye and Ear Infirmary/Harvard Medical School, Boston, MA, USA	Clin Ophthalmol. 2011;5:377-80	2011	English	<p>OBJECTIVE: To determine if pseudophakia affects selective laser trabeculoplasty (SLT) intraocular pressure (IOP) lowering effect. METHODS: A retrospective chart review was performed on 94 eyes of 75 consecutive patients who underwent SLT as primary treatment for ocular hypertension and primary open-angle glaucoma between 2002 and 2005 and completed at least 30 months follow up. Patients were excluded if they required additional glaucoma medications, laser, or ocular surgery during the follow-up period. Patients were categorized as phakics or pseudophakics. Independent-samples t-test was performed to compare the mean percentage of IOP reduction at 3, 6, 12, 18, and 30 months after SLT between the phakic and pseudophakic groups. RESULTS: Seventy-six phakic and 18 pseudophakic eyes were included. IOP reduction in phakic group was 27.4% (2 week), 29.8% (3 months), 27.7% (9 months), 27.4% at (12 months) and 27.3% at (30 months). In pseudophakic patients, the mean IOP reduction was 19.8% (2 weeks), 26.5% (3 months), 23.2% (9 months), 22.5% (12 months), and 25.9% (30 months). An independent-sample t-test compared the percentage of IOP reduction between the phakic and pseudophakic groups and revealed higher percentage of IOP reduction in the phakic group at 2 weeks by 7.6% (P = 0.01). P value for difference was 0.34 (3 months), 0.25 (6 months), 0.18 (9 months), 0.12 (12 months), 0.36 (18 months), and 0.7 (30 months) after SLT. CONCLUSIONS: SLT response was delayed in pseudophakic compared to phakic patients, while the long-term effectiveness of SLT is the same in both groups.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
46	Peer reviewed Article	Clinical Outcomes Long term Follow Up	Long-Term Outcomes of Selective Laser Trabeculoplasty (SLT) Treatment	Ayala M, Chen E	Glaucoma Department, St. Erik Eye Hospital, Karolinska Institutet, Stockholm, Sweden	Open Ophthalmol J. 2011;5:32-4	2011	English	<p>PURPOSE: Glaucoma is a progressive optic neuropathy that may lead to blindness. Reducing intraocular pressure (IOP) seems to be the only treatment that slows progression in glaucoma. IOP can be decreased by pharmaceutical treatment, laser treatment or surgery. The aim of the present study was to assess the long-term efficacy of selective laser trabeculoplasty (SLT) treatment.</p> <p>METHODS: Retrospective chart review of eyes that underwent SLT between 1 January 2005 and 31 December 2005. The primary outcome measure was time to failure after SLT treatment. Failure after SLT was defined as any one or more of the following: change in the medical treatment, performance of a further SLT treatment, the patient being sent for surgery. All patients were treated over 90° with SLT.</p> <p>RESULTS: 120 eyes of 120 patients were identified. The average time to failure after SLT was 18 months. The success rate after 12 months was 62%, after 24 months 34%, after 36 months 28% and after 48 months 24%.</p> <p>CONCLUSIONS: The long-term effects of SLT when eyes were treated over 90° seem to be low. The authors recommend treating patients over 180°, as has traditionally been done. We suggest that this will improve the long-term results.</p>
47	Peer reviewed Article	Clinical Outcomes	The efficacy of low-energy selective laser trabeculoplasty	Tang M, Fu Y, Fu MS, Fan Y, Zou HD, Sun XD, Xu X	Shanghai Jiao-tong University Affiliated First People's Hospital, Ophthalmology, Shanghai, China	Ophthalmic Surg Lasers Imaging. 2011 Jan-Feb;42(1):59-63	2011	English	<p>BACKGROUND AND OBJECTIVE: to analyze the efficacy of low-energy selective laser trabeculoplasty (SLT) in patients.</p> <p>PATIENTS AND METHODS: in 74 patients (74 eyes) with ocular hypertension, suspected glaucoma, or primary open-angle glaucoma, SLT was the first-choice treatment. Thirty-nine patients in the low-energy group received treatment using half of conventional laser energy over 360° of the trabecular meshwork (at 100 points). Thirty-five patients in the control group received conventional laser energy. Patients were observed for 1 year. Complications and intraocular pressure (IOP) were observed.</p> <p>RESULTS: postoperative transient IOP spike (≥ 3 mm Hg) occurred in three eyes on the day of treatment and partial peripheral anterior synechiae occurred in one eye 1 month after treatment only in the control group. Effective rates of treatment ($\geq 20\%$ IOP reduction) at week 2 and month 1, 3, 6, and 12 after treatment were 69.23%, 64.10%, 61.54%, 53.85%, and 48.72% in the low-energy group and 71.43%, 71.43%, 60%, 51.43%, and 48.57% in the control group, respectively. There was no statistically significant difference between the two groups at various time points ($P = .836, .501, .892, .835, .990$).</p> <p>CONCLUSION: compared with SLT using conventional laser energy, low-energy SLT lowers IOP with fewer complications, making it a safe and effective option.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
48	Peer reviewed Article	Review	Lasers in primary open angle glaucoma	Sihota R	Glaucoma Research Facility and Clinical Services, Dr. Rajendra Prasad Centre for Ophthalmic Sciences, All India Institute of Medical Sciences, New Delhi, India	Indian J Ophthalmol. 2011 Jan;59 Suppl:S114-7	2011	English	Lasers have been used in the treatment of primary open angle glaucoma (POAG) over the years, with the hope that they would eventually replace medical and surgical therapy. Laser trabeculoplasty (LT) is an application of argon, diode, or selective laser energy to the surface of the trabecular meshwork to increase the aqueous outflow. The mechanisms by which intraocular pressure (IOP) is lowered could be mechanical, biologic, or by division of adjacent cells. It is commonly used as an adjunct to medical therapy, but is contraindicated if the angle is obstructed, e.g., peripheral anterior synechia (PAS) or developmental glaucomas. About 75% of individuals will show a significant fall in IOP after argon laser trabeculoplasty (ALT), and the response is similar with selective laser trabeculoplasty (SLT). The effects of LT are not always long lasting, with about 10% of individuals showing a rise in IOP with every passing year. Laser thermal sclerostomy, ab interno or externo, is an alternative to other full-thickness filtration procedures. Longer wavelengths in the infrared range have water-absorptive characteristics that facilitate perforation of the sclera. These lasers can be used to avoid intraocular instrumentation and minimize conjunctival trauma.
49	Peer reviewed Article	Secondary Glaucoma Clinical outcomes Primary Therapy	Long-term safety and efficacy of selective laser trabeculoplasty as primary therapy for the treatment of pseudoexfoliation glaucoma compared with primary open-angle glaucoma	Shazly TA, Smith J, Latina MA	Ophthalmology Department, Massachusetts Eye and Ear Infirmary, Harvard Medical School, Boston, MA, USA	Clin Ophthalmol. 2010 Dec 16;5:5-10	2010	English	<p>PURPOSE: To investigate the safety and efficacy of selective laser trabeculoplasty (SLT) to reduce intraocular pressure (IOP) in patients with pseudoexfoliation glaucoma (PXFG) compared with primary open-angle glaucoma (POAG). DESIGN: Non-randomized, prospective, clinical trial. METHODS: Nineteen eyes of 13 patients with POAG and 18 eyes of 13 patients with PXFG were treated with SLT. Patients were followed without antiglaucoma medications until additional medical, laser, or surgical intervention was initiated, at which time they were considered failures, had withdrawn from the study, or underwent a second SLT. RESULTS: The POAG and PXFG eyes showed similar reductions of IOP over the 49 months of follow-up. At 30 months of follow-up the POAG group showed a mean IOP of 17.6 ± 2.8 mmHg and a mean IOP reduction of 5.7 ± 2.1 mmHg; the PXFG group showed a mean IOP of 18.3 ± 4.7 and a mean IOP reduction of 5.3 ± 3.0 mmHg. Four eyes in the PXFG group and three eyes in the POAG group failed by 30 months. The cumulative probability of success was 74% for the PXFG group and 77% for the POAG group. Four PXFG eyes underwent a second SLT after 30 months of follow-up with a final IOP of 17.6 ± 2.8 mmHg. There were no serious adverse events. CONCLUSION: SLT is a safe and effective method to lower IOP in patients with PXFG as initial glaucoma therapy. Both groups showed similar IOP reductions and failure rates.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
50	Peer reviewed Article	Adjunct Therapy Clinical Outcomes	Clinical Results of Selective Laser Trabeculoplasty in Open-Angle Glaucoma in Japanese Eyes: Comparison of 180 Degree With 360 Degree SLT	Shibata M, Sugiyama T, Ishida O, Ueki M, Kojima S, Okuda T, Ikeda T	Department of Ophthalmology, Osaka Medical College, Daigaku-machi, Takatsuki-shi, Osaka Department of Ophthalmology, Okuda Eye Clinic, Naracho, Tenri-shi, Nara, Japan	J Glaucoma. 2010 Dec 16. [Epub ahead of print]	2010	English	<p>PURPOSE: To evaluate the efficacy of selective laser trabeculoplasty (SLT) in the adjunctive treatment of medically diagnosed open-angle glaucoma and to compare the difference in intraocular pressure (IOP) lowering effects between 180-degree and 360-degree SLT.</p> <p>METHODS: This study is a retrospective consecutive chart review of open-angle glaucoma patients who had undergone first-time SLT from January of 2005 to July of 2007. All the patients had primary open-angle glaucoma or pseudoexfoliation glaucoma under medical treatment and followed for at least 3 months after the procedure. The IOP reduction and treatment success were compared with the 2 treatment types.</p> <p>RESULTS: Twenty-nine patients underwent 180-degree SLT (35 eyes) and 25 patients underwent 360-degree SLT (34 eyes). The average follow-up was 19.5 months (range 3 to 36) for 180-degree group and 17.9 months (range 3 to 36) for 360-degree group. During the follow-up period, the 360-degree SLT group showed significantly lower posttreatment IOP at each follow-up point relative to pretreatment IOP, and its IOP reduction rate stayed statistically higher than the 180-degree group. We found a positive correlation between the pretreatment IOP and the IOP reduction rate for 360-degree SLT. The lower the pretreatment IOP was, the lower IOP reduction rate became. A Kaplan-Meier survival analysis showed higher success rates after 360-degree SLT than after 180-degree SLT.</p> <p>CONCLUSIONS: The 360-degree SLT was shown to be more effective than 180-degree SLT for intermediate term reduction in IOP of Japanese patients with open-angle glaucoma as an adjunctive treatment protocol.</p>
51	Peer reviewed Article	Primary Therapy Clinical Outcomes	The Efficacy of Low-Energy Selective Laser Trabeculoplasty	Tang M, Fu Y, Fu MS, Fan Y, Zou HD, Sun XD, Xu X	Department of Ophthalmology, the First People's Hospital affiliated to Shanghai Jiao Tong University, Shanghai, People's Republic of China	Ophthalmic Surg Lasers Imaging. 2010 Dec 1:1-5 (Epub ahead of print)	2010	English	<p>BACKGROUND AND OBJECTIVE: To analyze the efficacy of low-energy selective laser trabeculoplasty (SLT) in patients.</p> <p>PATIENTS AND METHODS: In 74 patients (74 eyes) with ocular hypertension, suspected glaucoma, or primary open-angle glaucoma, SLT was the first-choice treatment. Thirty-nine patients in the low-energy group received treatment using half of conventional laser energy over 360° of the trabecular meshwork (at 100 points). Thirty-five patients in the control group received conventional laser energy. Patients were observed for 1 year. Complications and intraocular pressure (IOP) were observed.</p> <p>RESULTS: Postoperative transient IOP spike (≥ 3 mm Hg) occurred in three eyes on the day of treatment and partial peripheral anterior synechiae occurred in one eye 1 month after treatment only in the control group. Effective rates of treatment ($\geq 20\%$ IOP reduction) at week 2 and month 1, 3, 6, and 12 after treatment were 69.23%, 64.10%, 61.54%, 53.85%, and 48.72% in the low-energy group and 71.43%, 71.43%, 60%, 51.43%, and 48.57% in the control group, respectively. There was no statistically significant difference between the two groups at various time points ($P = .836, .501, .892, .835, .990$).</p> <p>CONCLUSION: Compared with SLT using conventional laser energy, low-energy SLT lowers IOP with fewer complications, making it a safe and effective option.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
52	Peer reviewed Article	Basic Science	Selective laser trabeculoplasty induced changes in the thickness of ciliary body and iris evaluated by ultrasound biomicroscopy	Aykan U, Salcan I, Yildirim O, Ersanli D	Department of Ophthalmology, GATA Haydar-pasa Training Hospital, Tib-biye Street, 34000, Uskudar, Istanbul, Turkey	Graefes Arch Clin Exp Ophthalmol. 2010 Nov 23 (Epub ahead of print)	2010	English	<p>BACKGROUND: Selective laser trabeculoplasty (SLT) is widely used for the treatment of glaucoma. The main target tissue of this treatment modality is trabecular meshwork. We aimed to detect the SLT-induced changes in the thickness of ciliary body (CBT) and iris (IT), quantitatively.</p> <p>METHODS: Thirty-one patients treated by SLT were examined by ultrasound biomicroscopy (UBM) at different locations of ciliary body and iris at four quadrants, before and after (3rd, 7th, and 30th days) SLT. The IT was measured at various locations; 500 µm anterior to the scleral spur (IT(1)), 2 mm from the iris root (IT(2)) and near the pupillary edge where the iris thickness was maximum (IT(3)) at four quadrants. The CBT at positions 1 and 2 mm posterior to the scleral spur were measured (CBT(1-2)). Additionally, intraocular pressure (IOP) levels were measured in all visits and post-laser 1 h.</p> <p>RESULTS: There were statistically significant higher CBT values at 3rd and 7th-day measurements in the study compared to pre-treatment levels ($p<0.0001$, $p<0.0001$, respectively). CBT(2) values at day 30 were similar compared to pre-treatment values (overall $p=0.140$), but CBT(1) values at day 30 were not exactly similar compared to pre-treatment values in superior and nasal quadrants (overall $p=0.027$). IT values obtained in the 3rd and 7th days were significantly higher in all quadrants and regions when compared to the pre-treatment values ($p<0.0001$, $p<0.0001$, respectively). There were no statistically significant differences in any of the IT values at the 30th day in comparison to the pre-treatment values ($p=0.45$).</p> <p>CONCLUSIONS: The results suggest that SLT induces prominent increases in CBT and IT returning to baseline thickness in a month, which may be caused by inflammation, vascular engorgement, or mechanical muscular contraction.</p>
53	Peer reviewed Article	Complications	Corneal Edema and Haze After Selective Laser Trabeculoplasty	Regina M, Bunya VY, Orlin SE, Ansari H	Scheie Eye Institute, University of Pennsylvania, Philadelphia, PA, USA	J Glaucoma. 2010 Aug 16 (Epub ahead of print)	2010	English	<p>PURPOSE: To report 2 cases of corneal edema, haze, and thinning in patients after undergoing selective laser trabeculoplasty.</p> <p>METHODS: Selective laser trabeculoplasty was performed for the treatment of primary open-angle glaucoma on 2 patients who subsequently developed corneal stromal haze within 24 to 48 hours of the procedure.</p> <p>RESULTS: The patients were treated with topical steroids for several weeks. Although their corneal edema resolved, both patients were left with residual corneal scarring and thinning. One patient had a significant hyperopic shift.</p> <p>CONCLUSIONS: Corneal edema, haze, and thinning after selective laser trabeculoplasty is an extremely rare event, with only 2 other cases reported in the literature. Although certain causes are postulated to play a role in this complication, it is not yet understood what may predispose a patient to corneal changes as a result of this laser procedure.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
54	Peer reviewed Article	Primary Therapy Clinical Outcomes Basic Science	Effect of primary selective laser trabeculoplasty on tonographic outflow facility: a randomised clinical trial	Goyal S, Beltran-Agullo L, Rashid S, Shah SP, Nath R, Obi A, Lim KS	Department of Ophthalmology, St Thomas' Hospital, London, UK	Br J Ophthalmol. 2010 Nov; 94(11):1443-7 (Epub 2010 May 14)	2010	English	<p>PURPOSE: To investigate the effect of 180° versus 360° primary selective laser trabeculoplasty (SLT) on tonographic outflow facility and intraocular pressure (IOP).</p> <p>DESIGN: Prospective, single masked randomised clinical trial.</p> <p>PARTICIPANTS: Patients with untreated primary open angle glaucoma or ocular hypertension both with IOP > 21-35 mmHg.</p> <p>METHODS: 40 patients randomly treated with 180° or 360° SLT after baseline tonographic outflow facility (electronic Schiøtz tonography) and IOP measurements were repeated after 1 month. One eye from each patient was randomly selected for analysis. Eight untreated eyes were included as a control group.</p> <p>MAIN OUTCOME MEASURES: Tonographic outflow facility and IOP difference. Responders were defined as having at least a 20% reduction in IOP.</p> <p>RESULTS: Three patients were excluded due to poor tonography. There were 18 eyes in the 180° group and 19 eyes in the 360° group. Tonographic outflow facility increased significantly (180° p = 0.003, 360° p = 0.005) and IOP decreased significantly (180° and 360° p < 0.001) from baseline. There were no significant differences between the two groups as regards the increase in tonographic outflow facility (180° group 37.5%, 360° group 41%, p = 0.23) and decrease in IOP (180° group 24%, 360° group 35%, p = 0.35). There were similar number of responders in 180° group (72%) as compared to 360° group (89.5%, p = 0.23). Tonographic outflow facility and IOP did not change significantly from baseline in the control group (tonographic outflow facility: 8% increase p = 0.48, IOP: 4% decrease p = 0.33).</p> <p>CONCLUSIONS: Primary SLT significantly increased the tonographic outflow facility and decreased IOP in patients with primary open angle glaucoma and ocular hypertension but no statistically significant differences were found between the 360° and 180° groups. The level of IOP reduction due to primary SLT treatment could not be explained by the increase in tonographic outflow facility alone.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
55	Peer reviewed Article	Clinical Outcomes Intra-ocular Pressure Fluctuations	Selective laser trabeculoplasty reduces mean IOP and IOP variation in normal tension glaucoma patients	El Mallah MK, Walsh MM, Stinnett SS, Asrani SG	Ocala Eye, Ocala, Florida, USA	Clin Ophthalmol. 2010 Aug 9;4:889-93	2010	English	<p>PURPOSE: To evaluate the effect of selective laser trabeculoplasty (SLT) in normal tension glaucoma (NTG) patients.</p> <p>PATIENTS AND METHODS: A retrospective review was performed of NTG patients who had undergone SLT at the Duke University Eye Center between 12/2002 and 7/2005. For each eye of each patient at pre-laser and post-laser time points, the IOP measurements were summarized by mean, standard deviation, and range. Then for each of these descriptive statistics, the differences between pre-laser and post-laser values were obtained. Statistical analysis was performed using a random effects model. MAIN OUTCOME MEASURES: difference in mean IOP, standard deviation of IOP, and range of IOP.</p> <p>RESULTS: Thirty-one eyes of 18 patients were included for analysis. The average of the mean pre-operative IOP measurements was 14.3 +/- 2.6 mmHg compared to 12.2 +/- 1.7 mmHg (P < 0.001) post-operatively. The mean pre-operative standard deviation was 1.9 +/- 0.9 mmHg compared to 1.0 +/- 0.6 mmHg (P = 0.002) post-operatively while the mean IOP range prior to treatment was 4.5 +/- 2.5 mmHg compared to 2.5 +/- 1.9 mmHg (P = 0.017) after treatment.</p> <p>CONCLUSION: In this pilot study, SLT was found to lower mean IOP and intervisit IOP variation in NTG patients. Given the importance of IOP variation and its association with glaucoma progression, measurement of IOP variation following treatment with SLT may be considered.</p>
56	Peer reviewed Case Report	Clinical Outcomes	SLT and Adjunctive Medical Therapy: A Prediction Rule Analysis	Martow E, Hutnik CM, Mao A	Department of Ophthalmology, Ivey Eye Institute, St Joseph's Hospital, Lawson Health Research Institute, University of Western Ontario, Ontario, Canada	J Glaucoma. 2010 Jun 23 (Epub ahead of print)	2010	English	<p>PURPOSE: To investigate if specific classes of antiglaucoma medications have an influence on selective laser trabeculoplasty (SLT) success.</p> <p>METHODS: This retrospective prediction rule analysis investigated 120 eyes from 120 patients diagnosed with either open angle glaucoma or ocular hypertension, who underwent SLT treatment. Treatment success was defined as >=20% intraocular pressure (IOP) reduction at 3 and 6 months after the treatment date. Multivariate logistic regression analyses were performed to determine success predictors.</p> <p>RESULTS: Pre-SLT IOP (up to 4 wk before SLT therapy) was the only independent predictor for >=20% IOP reduction with an odds ratio of 1.30 when controlling for pre-SLT antiglaucoma drops. The area under receiver operator characteristic curve was 0.777.</p> <p>CONCLUSIONS: Topical medications do not adversely, nor favorably, affect SLT success. SLT efficacy is positively associated with the degree of IOP elevation before SLT treatment. Pigmentation of the anterior chamber angle, class of antiglaucoma medications, diabetes, sex, corneal thickness, pseudophakia, diagnosis, washout of eye drops, and previous argon laser trabeculoplasty treatment are not associated with SLT treatment efficacy.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
57	Peer reviewed Article	Basic Science	Similar effects of selective laser trabeculoplasty and prostaglandin analogs on the permeability of cultured Schlemm canal cells	Alvarado JA, Iguchi R, Martinez J, Trivedi S, Shifera AS	Beckman Vision Center, Department of Ophthalmology, University of California-San Francisco, San Francisco, CA, USA	Am J Ophthalmol. 2010 Aug;150(2):254-64	2010	English	<p>PURPOSE: To evaluate whether selective laser trabeculoplasty and prostaglandin analogs regulate the permeability of cultured human Schlemm canal cells by inducing intercellular junction disassembly. DESIGN: Laboratory investigation.</p> <p>METHODS: Intercellular junctions were made visible in living cells by making them fluoresce after transfection with a plasmid expressing the zonula occludens 1 protein tagged with green fluorescent protein. Schlemm canal cells were treated by direct laser irradiation; by exposure to media conditioned by either lasered Schlemm canal cells or trabecular meshwork cells; by exposure to the prostaglandin analogs latanoprost, bimatoprost, and travoprost; or by the addition of the nonprostaglandin agents brimonidine, timolol, and dorzolamide. Junction disassembly was monitored using fluorescence microscopy, and permeability alterations were measured as changes in conductivity using flow meters.</p> <p>RESULTS: The direct laser irradiation of Schlemm canal cells caused a 3-fold increase in conductivity. Exposure of the cells to media conditioned by lasered Schlemm canal cells or trabecular meshwork cells induced junction disassembly and a 2- to 4-fold increase in conductivity. Exposure to prostaglandin analogs also induced junction disassembly and a 4- to 16-fold increase in conductivity, whereas the 3 nonprostaglandin agents tested were ineffective in both regards.</p> <p>CONCLUSIONS: Exposure to factors secreted by lasered Schlemm canal cells and lasered trabecular meshwork cells and the application of prostaglandin analogs induced junction disassembly while increasing the permeability of Schlemm canal cells. These findings support our hypothesis that selective laser trabeculoplasty and prostaglandin analogs share a common mechanism that likely mediates their pressure-lowering effects.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
58	Peer reviewed Article	Basic Science	Monocyte modulation of aqueous outflow and recruitment to the trabecular meshwork following selective laser trabeculoplasty	Alvarado JA, Katz LJ, Trivedi S, Shifer A	Department of Ophthalmology, University of California, San Francisco, CA, USA	Arch Ophthalmol. 2010 Jun;128(6):731-7	2010	English	<p>OBJECTIVES: To determine whether selective laser trabeculoplasty (SLT) induces monocyte recruitment to the trabecular meshwork (TM) in human and monkey eyes and whether monocytes increase both aqueous outflow in vivo and the conductivity of human Schlemm canal endothelial cells (SCEs) in vitro.</p> <p>METHODS: Monocyte recruitment was examined morphometrically in control human and monkey eyes and compared with that following SLT applied 1 to 3 days earlier. Outflow facility was measured for up to 4 days after the intracameral infusion of autologous macrophages in rabbits. Schlemm canal endothelial cell conductivity was measured using flow meters after exposing cultured SCEs to monocytes and monocyte-secreted factors for 24 hours.</p> <p>RESULTS: Our estimates show that the TM in the human eye normally had an average of 15 003 monocytes, while in the monkey eye there were 3181 monocytes, and this number increased 4- to 5-fold following SLT. The intracameral infusion of autologous macrophages in rabbits increased outflow facility 2-fold in a rapid and sustained manner. Human monocytes and monocyte-secreted factors increased SCE conductivity 2-fold in vitro.</p> <p>CONCLUSIONS: The number of monocytes/macrophages in the TM increases substantially after SLT and monocytes augment both outflow facility and SCE conductivity. Clinical Relevance These findings indicate that the innate immune system in general and monocytes in particular play an important role in aqueous outflow homeostasis. The recruitment of monocytes in increased numbers after SLT likely plays a role in lowering the intraocular pressure after this procedure. The intracameral introduction of autologous monocytes harvested from a vein could have therapeutic potential as a cell-based individualized treatment of glaucoma.</p>
59	Peer reviewed Article	Clinical Outcomes Intra-ocular Pressure Fluctuations	Influence of selective laser trabeculoplasty on 24-hour diurnal intraocular pressure fluctuation in primary open-angle glaucoma: a pilot study	Kóthy P, Tóth M, Holló G	Department of Ophthalmology, Semmelweis University, Budapest, Hungary	Ophthalmic Surg Lasers Imaging. 2010 May-Jun;41(3):342-7	2010	English	<p>BACKGROUND AND OBJECTIVE: To investigate the influence of selective laser trabeculoplasty on mean diurnal intraocular pressure (IOP) and diurnal IOP fluctuation in primary open-angle glaucoma.</p> <p>PATIENTS AND METHODS: After washout from intraocular pressure-lowering drugs, a baseline diurnal IOP curve was obtained for 26 eyes of 13 patients before selective laser trabeculoplasty. The IOP curve was repeated at 3 and 6 months.</p> <p>RESULTS: In five eyes, office time (8:00 a.m. to 12:00 p.m.) IOP decreased by 20% or more. No similar decrease was seen in mean diurnal IOP in any case. IOP-lowering drugs were required for 11 eyes before the 3-month visit. Baseline diurnal IOP was higher for these eyes than for the others ($P = .002$). Compared with baseline values, a significant decrease was seen in mean IOP at the 6-month visit ($P = .017$) and in IOP fluctuation at both visits ($P < .001$ and $P = .004$, respectively) for the eyes without drug treatment.</p> <p>CONCLUSION: Although no eyes showed mean diurnal IOP reduction of 20% or more, selective laser trabeculoplasty resulted in a significant decrease in the amplitude of diurnal IOP fluctuation.</p>
60	Peer reviewed Case Report	Complications	Bilateral diffuse lamellar keratitis following consecutive selective laser trabeculoplasty in LASIK patient	Holz H, Pirouzian A	Department of Ophthalmology, Kaiser Permanente Medical Group, Santa Clara, CA, USA	J Cataract Refract Surg. 2010 May;36(5):847-9	2010	English	<p>A 48-year-old man with a history of myopic laser in situ keratomileusis (LASIK) had selective laser trabeculoplasty (SLT) for the treatment of glaucoma in the right eye. He subsequently developed grade 2 diffuse lamellar keratitis (DLK). He then elected to have SLT in the left eye and developed grade 1 DLK. To our knowledge, this is the first report of bilateral consecutive late postoperative DLK following SLT after LASIK.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
61	Peer reviewed Article	Secondary Glaucoma Clinical outcomes	Selective laser trabeculoplasty in the treatment of pseudoexfoliation glaucoma in patients allergic to all anti-glaucoma drops	Gavrić M, Gabrić N, Dekaris I, Bohac M, Draca N	Eye Clinic Sv-jetlost, Zagreb, Croatia	Coll Antropol. 2010 Apr;34 Suppl 2:275-7	2010	English	Secondary chronic open-angle glaucoma associated with pseudoexfoliation (PEX) syndrome accounts for approximately 25% of all glaucomas and represents the most common identifiable cause of glaucoma overall. Selective laser trabeculoplasty (SLT) is effective in reducing intraocular pressure (IOP) in glaucomatous patients and has the advantage of preserving surrounding structures. We report here SLT treatment of a 82 year old female with a secondary developed open-angle pseudoexfoliation glaucoma allergic to all anti glaucoma eye drops especially those which contain bentsalconium chloridum as preservative. Since patient was allergic also to methyl-cellulose, we performed SLT with water as a mediator. Patient had PEX syndrome for 10 years, immature cataracts on both eyes, and best corrected visual acuity (BCVA) 0.7 on the right and 0.2 on the left eye. We have monitored intraocular pressure (IOP), the changes in the visual field and optic nerve. Preoperative IOP was 28 mmHg on the right and 30 mmHg on the left eye. The follow up period was 24 months with time points for measured parameters every 3 months. After 18 months IOP remained in the normal values (average 17 mmHg) on the right eye, but on the left eye it increased up to 28 mmHg. SLT re-treatment was carried out on the left eye and the IOP stabilized again on the values between 16-18mmHg. There were no significant change in the visual field and optic nerve configuration before and after SLT (C/D value for right eye: 0.3-0.4; C/D left eye: 0.5). Based on this case report, SLT seems to be very effective treatment for maintaining regular IOP in patient with PEX who is allergic to all types of medications.
62	Peer reviewed Article	Secondary Glaucoma Clinical outcomes	Selective laser trabeculoplasty for elevated intraocular pressure following subtenon injection of triamcinolone acetonide	Yuki K, Inoue M, Shiba D, Kawamura R, Ishida S, Ohtake Y	Department of Ophthalmology, Keio University School of Medicine, Tokyo, Japan	Clin Ophthalmol. 2010 Apr 26;4:247-9	2010	English	<p>PURPOSE: To report on the efficacy of selective laser trabeculoplasty (SLT) for elevated intraocular pressure (IOP) following subtenon injection of triamcinolone acetonide.</p> <p>METHOD: SLT was performed on four of 148 eyes in which IOP was elevated after a subtenon injection of triamcinolone acetonide and could not be maintained within normal limits by conventional medications. Postoperative IOP and relative reduction of IOP were evaluated.</p> <p>RESULTS: IOP was reduced in three eyes to within the normal range without any medications six months after SLT alone, but trabeculotomy was performed on one eye. Percentage reduction in IOP after SLT was 21.6% at one month, 45.0% at three months, and 52.7% at nine months.</p> <p>CONCLUSION: SLT may be effective in reducing elevated IOP following subtenon injection of triamcinolone acetonide and should be considered before glaucoma surgery.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
63	Peer reviewed Article	Basic Science	Rapid and delayed death of cultured trabecular meshwork cells after selective laser trabeculoplasty	Wood JP, Plunkett M, Previn V, Chidlow G, Casson RJ	South Australian Institute of Ophthalmology, Ophthalmic Research Laboratories, Adelaide, Australia	Lasers Surg Med. 2010 Apr;42(4):326-37	2010	English	<p>BACKGROUND AND OBJECTIVE: Selective laser trabeculoplasty (SLT) is becoming increasingly employed to reduce elevated intraocular pressure in glaucoma patients. SLT is known to target the ocular trabecular meshwork (TM), but the exact response mechanisms to this treatment have not been clearly delineated. The aim of the present study, therefore, was to investigate the modes of death of cultured bovine TM cells subjected to SLT in vitro.</p> <p>MATERIALS AND METHODS: Bovine TM cell cultures were established, pigmented with exogenous melanin and irradiated with a Q-switched, frequency doubled, Nd:YAG laser, at different energy settings (0.05-1.0 mJ). Influences on cells were determined for up to 10 days post-treatment by trypan blue exclusion, terminal deoxynucleotidyl transferase dUTP nick-end labeling (TUNEL) and by morphological assessment. Furthermore, homogeneous mixtures of pigmented and non-pigmented TM cells were irradiated to ascertain selectivity of laser effects.</p> <p>RESULTS: At higher energy levels (1.0, 0.75 mJ), immediate loss of cells was detected at the irradiated site. Trypan blue exclusion analysis showed that necrotic cell death subsequently occurred up to 8 hours following irradiation, peaking at 60 minutes. This was followed by delayed cell death peripheral to the irradiated area which was characteristic of apoptosis and which peaked at 2-3 days post-treatment. When mixed ultures were tested, laser treatment selectively killed pigmented cells at an energy level equivalent to the lower cell killing threshold in the initial studies (0.2 mJ) but at the higher laser energy of 0.35 mJ, all cells were non-selectively killed.</p> <p>CONCLUSIONS: SLT treatment killed pigmented TM cells in culture by a variety of processes (instant vaporization, rapid necrosis, delayed apoptosis), depending on the magnitude of the energy used and the distance from the center of the irradiated zone. These data may assist in the elucidation of the mechanism of action of the SLT procedure on TM cells in situ.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
64	Peer reviewed Article	Replace-ment Therapy Clinical Outcomes	Excimer laser trabeculotomy vs 180 degrees selective laser trabeculoplasty in primary open-angle glaucoma. A 2-year randomized, controlled trial	Babighian S, Caretti L, Tavolato M, Cian R, Galan A	Department of Ophthalmology, St Antonio Hospital, Padova, Italy	Eye (Lond). 2010 Apr;24(4):632-8. Epub 2009 Jul 10	2010	English	<p>PURPOSE: To compare the effectiveness and safety of excimer laser trabeculotomy (ELT) ab interno vs selective laser trabeculoplasty (SLT) over 24 months of follow-up in patients with primary open-angle glaucoma (POAG) refractory to medical therapy.</p> <p>PATIENTS AND METHODS: This prospective, randomized study included 30 consecutive eyes assigned randomly to either ELT or SLT group. ELT was carried out using a XeCl Excimer Laser with an emission wavelength of 308 nm. Eight spots were equally distributed at a distance of 500 microm from one another over the anterior trabeculum. The SLT patients were treated with a frequency-doubled q-switched neodymium:yttrium-aluminum-garnet laser (wavelength 532 nm). Approximately 50 adjacent, but not overlapping, laser spots were distributed over 180 degrees of the trabecular meshwork, using an energy level ranging from 0.7 to 1.0 mJ per pulse. The main outcome measure was intraocular pressure (IOP) lowering after ELT and SLT. Success was defined as $\geq 20\%$ reduction in IOP without further glaucoma intervention.</p> <p>RESULTS: At 24 months, complete success rates were 53.3% for the ELT group and 40% for the SLT group ($P=0.35$, Fisher's exact test); qualified success rates were 33.3% for the ELT and 26.6% for the SLT group ($P=0.5$, Fisher's exact test). Mean IOP decreased from 25.0 ± 1.9 to 17.6 ± 2.2 mmHg (-29.6%; $P<0.0001$) in the ELT group and from 23.9 ± 0.9 to 19.1 ± 1.8 mmHg (-21%; $P<0.0001$) in the SLT group.</p> <p>CONCLUSIONS: Both ELT and SLT proved to be effective techniques in the treatment of POAG refractory to medical therapy.</p>
65	Peer reviewed Case Report	Secondary Glaucoma Clinical outcomes	Selective Laser Trabeculoplasty in Pseudophakic Glaucoma	Nagar M, Shah N, Kapoor B	Clayton Eye Centre, Wakefield, West Yorkshire, UK	Ophthalmic Surg Lasers Imaging. 2010 Mar 9:1-2. (Epub ahead of print)	2010	English	<p>Glaucoma following cataract operation is more common when complications occur during surgery. Patients who had posterior capsule rupture during cataract surgery usually have a prolonged intraoperative time and manipulation. In such cases, secondary glaucoma may develop due to chronic trabecular damage and prolonged topical steroid use. It is usually treated with topical anti-glaucoma medication or surgery. Recently selective laser trabeculoplasty (SLT) has emerged as a relatively new, safe and effective treatment modality. Three cases of pseudophakic secondary glaucoma following complicated cataract surgery treated successfully with 180 degrees SLT treatment are presented. Case 1 responded well to SLT during 5-year available follow-up, along with reduction in topical anti-glaucoma medication. In Cases 2 and 3, SLT was used as adjunctive to topical anti-glaucoma medication and target intra ocular pressure (IOP) was maintained for 4 and 2 years of available follow-up, respectively. To our best knowledge this is the first case series where SLT has been shown effective in cases of pseudophakic secondary glaucoma.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
66	Peer reviewed Article	Adjunct Therapy Clinical Outcomes	One year results of selective laser trabeculoplasty in the treatment of primary open angle glaucoma	Thatsnarong D, Ngamchit-tiampai C, Phoksunthorn T	Department of Ophthalmology, Mettapracharak Hospital, Nakhon Pathom, Thailand	J Med Assoc Thai. 2010 Feb;93(2):211-4	2010	English	<p>OBJECTIVE: To evaluate the efficacy and safety of selective laser trabeculoplasty (SLT) as a treatment of primary open angle glaucoma (POAG).</p> <p>MATERIAL AND METHOD: In a prospective clinical study, 21 eyes suffering from POAG were treated with SLT over inferior 180 degrees of trabecular meshwork. The intraocular pressure (IOP) was measured before and 1 hour, 1 week, and 1, 3, 6, and 12 months after the treatment. The glaucoma medications were continued on the same regimen during the study period.</p> <p>RESULTS: The mean preoperative IOP was 18.6 mmHg (SD 2.2). The mean IOP reduction were 4.9 mmHg (26.3%) 1 hour after SLT, 2.6 mmHg (14.0%) 1 week after SLT, 4.0 mmHg (21.5%) 1 month after SLT, 3.5 mmHg (18.8%) 3 months after SLT, 3.7 mmHg (19.9%) 6 months after SLT, and 3.3 mmHg (17.7%) 12 months after SLT. There were minimal adverse reactions including conjunctival injection and mild anterior chamber reaction.</p> <p>CONCLUSION: SLT is a safe and effective procedure to reduce IOP in POAG patients.</p>
67	Peer reviewed Article	Clinical Outcomes Methodology	The impact of anti-inflammatory therapy on intraocular pressure reduction following selective laser trabeculoplasty	Realini T, Charlton J, Hettlinger M	West Virginia University Eye Institute, Morgantown, Huntington, West Virginia, USA	Ophthalmic Surg Lasers Imaging. 2010 Jan-Feb;41(1):100-3	2010	English	<p>BACKGROUND AND OBJECTIVE: To determine whether the use of postoperative topical anti-inflammatory therapy affects the intraocular pressure (IOP)-lowering efficacy of selective laser trabeculoplasty in eyes with primary open-angle glaucoma.</p> <p>PATIENTS AND METHODS: In this prospective, randomized, observer-masked study, 25 participants with primary open-angle glaucoma following bilateral 360 degrees selective laser trabeculoplasty used prednisolone acetate 1% four times daily in one randomly selected eye for 1 week. IOP was assessed at baseline and 1 week, 1 month, and 3 months after selective laser trabeculoplasty.</p> <p>RESULTS: Baseline IOP and selective laser trabeculoplasty treatment parameters were comparable in both groups. Mean IOP was similar in eyes that did and did not receive steroid therapy at 1 week (17.0 vs 16.3 mm Hg, respectively, $P = .613$), 1 month (16.8 vs 16.2 mm Hg, respectively; $P = .571$), and 3 months (16.0 vs 15.8 mm Hg, respectively; $P = .819$).</p> <p>CONCLUSION: A 1-week course of topical prednisolone acetate 1% four times daily did not affect the IOP-lowering effect of selective laser trabeculoplasty in eyes with primary open-angle glaucoma.</p>
68	Peer reviewed Article	Clinical Outcomes Review	[Effectiveness and relevance of laser trabeculoplasty: treatment of open-angle glaucoma] Article in German	Eckert S.	Augenlinik, Universitätsklinikum Ulm, Prittwitzstrasse 43, 89075 Ulm, Deutschland. stephan.eckert@uniklinik-ulm.de	Ophthalmologe. 2010 Jan;107(1):18-21	2010	German	<p>Laser trabeculoplasty is a common glaucoma therapy that is safe and effective for reducing intraocular pressure. It was developed as a treatment for open-angle glaucoma in the 1970s, and larger studies proved its effectiveness in the years that followed. In recent years, through the implementation of newer processes such as selective laser trabeculoplasty, laser trabeculoplasty has experienced further developments. Because it causes less damage to the trabecular meshwork, it should have fewer adverse effects, making it a repeatable treatment. Studies on the indications, contraindications, and effectiveness of this method in lowering intraocular pressure are reviewed.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
69	Peer reviewed Article	Clinical Outcomes	Topical prostaglandin analogues do not affect selective laser trabeculoplasty	Singh D, Coote MA, O'Hare F, Walland MJ, Ghosh S, Xie J, Ruddie JB, Crowston JG	Department of Ophthalmology, Centre for Eye Research Australia, Department of Ophthalmology, Centre for Eye Research Australia	Eye (Lond). 2009 Dec;23(12):2194-9	2009		<p>PURPOSE: To investigate the effect of topical prostaglandin analogue use on the efficacy of selective laser trabeculoplasty (SLT) intraocular pressure (IOP) lowering in patients with open-angle glaucoma.</p> <p>PATIENTS AND METHODS: This retrospective study included 123 consecutive patients who underwent 180 degrees SLT for the first time. Eyes were grouped into those that received prostaglandin analogues before and after SLT (n=74) and those that did not (n=49). The main outcome measure was IOP lowering after SLT. Success was defined as $> \text{ or } \approx 20\%$ reduction in IOP without further glaucoma intervention.</p> <p>RESULTS: There was no significant difference in IOP lowering at 6 months post-laser between the prostaglandin and non-prostaglandin groups (3.9 ± 4.8 vs 4.6 ± 3.6 mm Hg, $P=0.43$). Long-term SLT success rates were also not significantly different between the treatment groups (Kaplan-Meier survival analysis, $P=0.68$). IOP lowering at 6 months was similar in eyes that received no glaucoma medications, monotherapy with or without a prostaglandin analogue, or combination therapy with or without prostaglandin analogues ($P=0.81$). Logistic regression analysis showed that various patient characteristics including age, sex, type of glaucoma, previous glaucoma surgery, and other glaucoma risk factors did not predict a successful SLT outcome. However, higher pre-operative IOP was found to predict SLT success (odds ratio=1.12, 95% CI=1.02-1.24, $P=0.02$).</p> <p>CONCLUSION: The IOP lowering efficacy of SLT is not influenced by the use of topical prostaglandin analogues.</p>
70	Peer reviewed Article	Basic Science	From the bedside to the bench and back again: predicting and improving the outcomes of SLT glaucoma therapy	Alvarado JA, Iguchi R, Juster R, Chen JA, Shifera AS	Beckman Vision Center, Department of Ophthalmology, University of California San Francisco	Trans Am Ophthalmol Soc. 2009 Dec;107:167-81	2009	English	<p>PURPOSE: To determine whether selective laser trabeculoplasty (SLT) and prostaglandin analogues (PGAs) have a common mechanism of action that involves increasing conductivity across Schlemm's canal endothelial cells (SCEs) and inducing a similar decrease in intraocular pressure (IOP) in a given patient.</p> <p>METHODS: The intercellular junctions in SCEs were made visible by transfection of a plasmid containing a GFP-tagged gene for ZO-1 protein. Transfected SCEs were treated with media conditioned by lasered trabecular meshwork endothelial cells (TMEs), or with latanoprost, bimatoprost, or travoprost. Non-transfected SCEs were exposed to brimonidine, timolol, or brinzolamide. Confocal microscopy and conductivity measurements documented the in vitro treatment effects. Clinically, the IOP in the first SLT-treated eye of 24 patients was measured (1) while on PGA therapy, (2) at "baseline" several weeks after discontinuing PGA therapy, and (3) approximately 90 days after SLT treatment.</p> <p>RESULTS: Both the in vitro addition of any of the 3 PGAs and of media conditioned by lasered TMEs induced similar SCE effects involving junction disassembly, paracellular pathway widening, and increased conductivity. Clinically, PGAs decreased IOP by a mean of 5.58 mmHg and SLT decreased IOP by 6.60 mmHg from a baseline of 21.52 mmHg.</p> <p>CONCLUSIONS: Exposure to media conditioned by lasered TMEs, or the addition of PGAs, induces the disassembly of intercellular junctions opening up the SCE barrier. Clinically, a positive PGA response predicts both a successful SLT outcome and the magnitude of the decrease in IOP after SLT. We hypothesize that SLT and PGA therapies may share a common mechanism of action.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
71	Peer reviewed Article	Complications	Hyphema following selective laser trabeculoplasty	Rhee DJ, Krad O, Pasquale LR	Massachusetts Eye and Ear Infirmary, Boston, MA, USA	Ophthalmic Surg Lasers Imaging. 2009 Sep-Oct;40(5):493-4	2009	English	Selective laser trabeculoplasty is an effective means of lowering intraocular pressure in patients with open-angle glaucoma with a low risk of complications. The authors report a case of hyphema noted 3 days after selective laser trabeculoplasty in a 77-year-old woman with primary open-angle glaucoma. Her intermittent use of oral nonsteroidal anti-inflammatory medications and chronic topical nonsteroidal anti-inflammatory use may have been a contributing risk factor.
72	Peer reviewed Article	Adjunct Therapy Clinical Outcomes	Selective laser trabeculoplasty for primary angle closure with persistently elevated intraocular pressure after iridotomy	Ho CL, Lai JS, Aquino MV, Rojanapongpun P, Wong HT, Aquino MC, Gerber Y, Belkin M, Barkana Y	Department of Ophthalmology, Singapore National Eye Center, Tan Tock Seng Hospital, Singapore	J Glaucoma. 2009 Sep;18(7):563-6	2009	English	PURPOSE: To determine whether selective laser trabeculoplasty (SLT) can lower intraocular pressure (IOP) in eyes with chronic primary angle closure, elevated IOP, and a patent iridotomy. PATIENTS AND METHODS: Patients with chronic angle closure who had undergone iridotomy, had an IOP greater than 21 mm Hg and a gonioscopically visible pigmented trabecular meshwork for at least 90 degrees were enrolled. SLT was applied to open angle segments. Duration of follow-up was 6 months. RESULTS: Sixty eyes of 60 patients were enrolled. The mean baseline IOP was 24.6 +/- 2.5 mm Hg. At 6 months, IOP reduction of > or = 3 mm Hg or 4 mm Hg was measured in 82% and 72% of eyes, respectively, and IOP reduction of > or = 20% or 30% was measured in 54% and 24% of eyes, respectively. When only eyes that were treated with the same number or fewer medications were considered, these IOP reductions were measured in 67%, 58%, 43%, and 15%, respectively. During the study period 1 eye (1.7%) required trabeculectomy owing to IOP elevation shortly after the SLT. There were no other significant complications attributable to SLT. CONCLUSIONS: SLT seems to be a safe and effective method of reducing IOP in many eyes with primary angle closure and a patent iridotomy in which there is a sufficient extent of visible trabecular meshwork.
73	Peer reviewed Article	Basic Science	Laser trabeculoplasty induces changes in the trabecular meshwork glycoproteome: a pilot study	Amelinckx A, Castello M, Arrieta-Quintero E, Lee T, Salas N, Hernandez E, Lee RK, Bhattacharya SK, Parel JM	Bascom Palmer Eye Institute, Ophthalmic Biophysics Center, University of Miami Miller School of Medicine, Miami, Florida, USA	J Proteome Res. 2009 Jul;8(7):3727-36	2009	English	Laser trabeculoplasty (LT) is a commonly used modality of treatment for glaucoma. The mechanism by which LT lowers the intraocular pressure (IOP) is unknown. With the use of cat eyes, selective laser trabeculoplasty (SLT) with a Q-switched frequency doubled Nd:YAG laser was used to treat the trabecular meshwork (TM). Laser treated TM was then subjected to proteomic analysis for detection of molecular changes and histological analysis for the detection of structural and protein expression patterns. In addition, the protein glycosylation patterns of laser treated and nontreated TM was assessed and differentially glycosylated proteins were proteomically identified. SLT laser treatment to the TM resulted in elevated glycosylation levels compared to nonlasered TM. TM laser treatment also resulted in protein expression levels changes of several proteins. Elevated levels of biglycan, keratocan and prolargin were detected in laser treated TM compared to nonlasered controls. Further investigation is anticipated to provide insight into how glycosylation changes affect TM proteins and TM regulation of aqueous outflow in response to laser trabeculoplasty.

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
74	Peer reviewed Case Report	Secondary Glaucoma Clinical outcomes	Selective laser trabeculoplasty for the treatment of intraocular pressure elevation after intravitreal triamcinolone injection	Baser E, Seymenoglu R	Celal Bayar University School of Medicine, Department of Ophthalmology, Celal Bayar University Hospital, Manisa, Turkey	Can J Ophthalmol. 2009 Jun;44(3):e21	2009	English	SLT for elevated IOP after IVTA has been reported infrequently in the literature. We present one case. Although the IOP drop in the case we present could be due to the waning of the steroid effect, our results also suggest that SLT can help in normalizing IOP safely and effectively in addition to medical therapy for persistent IOP elevation. The possible complications of SLT are minor and transient and the procedure is comfortable for the patient.
75	Peer reviewed Case Report	Complications	An unusual finding of corneal edema complicating selective laser trabeculoplasty	Moubayed SP, Hamid M, Choremis J, Li G	Universite de Montreal, Montreal, Canada	Can J Ophthalmol. 2009 Jun;44(3):337-8	2009	English	Correspondance - no abstract available.
76	Peer reviewed Article	SLT vs ALT	Selective laser trabeculoplasty versus argon laser trabeculoplasty in patients with uncontrolled open-angle glaucoma.	Russo V, Barone A, Cosma A, Stella A, Delle Noci N	Institute of Ophthalmology, University of Foggia, Foggia, Italy	Eur J Ophthalmol. 2009 May-Jun;19(3):429-34	2009	English	<p>PURPOSE: To compare the efficacy of selective laser trabeculoplasty (SLT) to argon laser trabeculoplasty (ALT) as treatment and retreatment to lower intraocular pressure (IOP) in patients with uncontrolled open-angle glaucoma (OAG) on maximally tolerated medication therapy with a follow-up of 12 months.</p> <p>METHODS: A total of 120 eyes of 120 patients with uncontrolled OAG were enrolled in the study. Group A included patients with IOP >22 mmHg on maximal medical therapy. A total of 43 eyes underwent SLT treatment and 41 eyes underwent ALT treatment. At the end of the follow-up IOP was <18 mmHg. Group B included patients with IOP >20 mmHg at 3 months follow-up after SLT or ALT treatment. These patients were retreated randomly, 18 with SLT and 18 with ALT.</p> <p>RESULTS: In Group A at the end of the follow-up there was no statistically significant difference in IOP lowering between SLT (6.01 mmHg) and ALT (6.12) (p=0.794). In Group B at the end of the follow-up patients undergoing SLT presented IOP lowering statistically significant to ALT treatment (6.24 mmHg and 4.65 mmHg, respectively, p<0.01).</p> <p>DISCUSSION: SLT is effective as treatment for patients with OAG and appears to be equivalent to ALT in IOP lowering at 12 months only in patients without a prior treatment. In case of retreatment SLT appears to be better than ALT in IOP lowering.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
77	Peer reviewed Article	Secondary Glaucoma Clinical outcomes	Selective laser trabeculoplasty for glaucoma after penetrating keratoplasty.	Nakakura S, Imamura H, Nakamura T	Department of Ophthalmology, Saiseikai Gose Hospital, Mimuro, Gose, Japan.	Optom Vis Sci. 2009 Apr;86(4):e404-6	2009	English	<p>PURPOSE: Postoperative intraocular pressure elevation is the most common complication to occur after penetrating keratoplasty (PKP). When topical antiglaucoma drops or oral systemic medication cannot lower this pressure, surgical intervention is necessary. However, surgery cannot yet be performed that does not adversely affect the graft, and better surgical treatments are required.</p> <p>METHODS: A 62-year-old man had undergone PKP to treat bullous keratopathy in the left eye. Secondary glaucoma occurred early postoperation and was controlled through topical antiglaucoma eye drops, medication, and the decreasing use of topical steroids. However, 7 months postsurgery, intraocular pressure (IOP) in the eye re-elevated to 42 mm Hg (Goldmann applanation tonometer). Selective laser trabeculoplasty was performed inferiorly for 6 h and then added selective laser trabeculoplasty performed superiorly for 6 h, 1 week later. Complete slit lamp biomicroscopy, visual acuity, IOP, gonioscopy, and mydriatic funduscopy were performed pre- and posttreatment for 6 months.</p> <p>RESULTS: IOP decreased from 42 to 27 mm Hg 1 week after selective laser trabeculoplasty (SLT) (inferior 180 degrees). After an additional superior 180 degrees SLT performed 2 weeks after this, IOP decreased to 15 mm Hg. Six months later, IOP was stable at 18 mm Hg, and graft rejection, new peripheral anterior synechiae, and visual acuity disturbance were not observed.</p> <p>CONCLUSIONS: IOP elevation after PKP was successfully treated with SLT. SLT will become a valuable therapeutic method that limits invasive surgery for treatment of secondary glaucoma after PKP.</p>
78	Peer reviewed Article	Secondary Glaucoma Clinical outcomes	Selective laser trabeculoplasty for the treatment of intraocular pressure elevation after intravitreal triamcinolone injection	Baser E, Seymenoglu R	Celal Bayar University School of Medicine, Department of Ophthalmology, Celal Bayar University Hospital, Manisa, Turkey	Can J Ophthalmol 2009;44:e21 (published online)	2009	English	<p>Case report - SLT for refractive elevated as a result of intravitreal triamcinolol injection. Conclusion: SLT can help in normalizing IOP safely and effectively in addition to medical therapy for persistent IOP elevation. The possible complications of SLT are minor and transient and the procedure is comfortable for the patient.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
79	Peer reviewed Article	Repeat-ability Clinical Outcomes	Repeat selective laser trabeculoplasty	Hong BK, Winer JC, Martone JF, Wand M, Altman B, Shields B	Yale University School of Medicine, New Haven, CT, USA	J Glaucoma. 2009 Mar;18(3):180-3.	2009	English	<p>PURPOSE: To evaluate the efficacy of repeat 360-degree selective laser trabeculoplasty (SLT) in glaucoma patients with prior successful 360-degree SLT.</p> <p>DESIGN: Retrospective chart review.</p> <p>METHODS: Forty-four eyes of 35 patients, > or =18 years of age, with open-angle glaucoma (primary open-angle, pseudoexfoliation, or pigmentary glaucoma), uncontrolled on maximum tolerable medical therapy, underwent an initial 360-degree SLT (SLT1), which was successful for > or =6 months, but eventually lost efficacy and was followed by a repeat 360-degree SLT (SLT2). Patients with prior argon laser trabeculoplasty or other glaucoma surgery, before or during the study period, were excluded. Intraocular pressure (IOP) measurements were recorded before each procedure and 1 to 4 weeks, 1 to 3 months, and 5 to 8 months posttreatment and 15 to 21 weeks after the initial SLT.</p> <p>RESULTS: Reduction in IOP after SLT1 and SLT2 was significantly less with repeat treatment at 1 to 3 months, with average decreases of -5.0 and -2.9 mm Hg, respectively (P=0.01), but there were no statistically significant differences between treatments at the other equivalent time points. Using a definition of "success" as > or =20% peak IOP reduction, success rates for SLT1 and SLT2 were not significantly different. There was also no significant difference in eyes that received SLT2 6 to 12 months after SLT1 compared with those that received SLT2 12 months or more after SLT1.</p> <p>CONCLUSIONS: Our findings suggest that repeat 360-degree SLT may be safe and effective after an initially successful 360-degree SLT has failed. These results may be achieved as early as 6 months after the first treatment</p>
80	Peer reviewed Article	Intraocular fluctuations Clinical outcomes	Intraocular pressure control and fluctuation: the effect of treatment with selective laser trabeculoplasty.	Nagar M, Luhishi E, Shah N.	Clayton Hospital, The Mid Yorkshire Hospitals NHS Trust, Sandal, Northgate, Wakefield, UK.	Br J Ophthalmol. 2009 Apr;93(4):497-501	2009	English	<p>AIMS: To evaluate the effect of selective laser trabeculoplasty (SLT) on intraocular pressure (IOP) control and diurnal tension curves of patients with open-angle glaucoma (OAG) and ocular hypertension (OHT), and to compare this effect with that of latanoprost.</p> <p>METHODS: Forty patients were randomised to receive either SLT or latanoprost. IOP control was evaluated by comparing pretreatment values with post-treatment measurements on day 3, week 1, month 1 and 4-6 months; success was defined as 20% decrease in IOP. Tension curves were plotted prior to treatment and 4-6 months afterwards; success was 50% reduction in fluctuation.</p> <p>RESULTS: SLT decreased pressure by 4.7 mm Hg on average (95% CI 3.6 to 5.7 mm Hg; p<0.01). The reduction was similar for latanoprost at all follow-ups except month 1; 75% of SLT patients and 73% of latanoprost patients achieved success in IOP control (p = 0.4). SLT significantly reduced IOP fluctuation, but latanoprost was more effective (3.6 mm Hg, 95% CI 3.2 to 3.9 mm Hg vs 2.5 mm Hg, 95% CI 2.2 to 2.9 mm Hg for SLT; p = 0.04). Success in fluctuation reduction was 50% for SLT and 83% for latanoprost (p = 0.045).</p> <p>CONCLUSIONS: Both SLT and latanoprost had a significant impact on IOP control and fluctuation. While latanoprost may be more likely to reduce IOP fluctuation, SLT has the benefit of being a one-time intervention not requiring ongoing patient compliance.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
81	Peer reviewed Article	Introcular fluctuations Clinical outcomes	A comparison of the inter-visit intraocular pressure fluctuation after 180 and 360 degrees of selective laser trabeculoplasty (SLT) as a primary therapy in primary open angle glaucoma and ocular hypertension.	Prasad N, Murthy S, Dagianis JJ, Latina MA.	Massachusetts Eye and Ear Infirmary, Boston, MA, USA.	J Glaucoma. 2009 Feb;18(2):157-60.	2009	English	<p>OBJECTIVE: To determine and compare the effect of 180 and 360 degrees of selective laser trabeculoplasty (SLT) treatment as a primary therapy on the intervisit intraocular pressure (IOP) fluctuation in patients followed up for a period of 2 years without any further medical or surgical intervention.</p> <p>METHODS: Retrospective chart review of patients with ocular hypertension and primary open angle glaucoma who received SLT as primary therapy without any subsequent medical or surgical intervention. IOP before SLT and postlaser IOP at all the visits during the follow-up period of months 6 to 24 was determined. The standard deviation (SD) of the mean IOP was used as a surrogate for IOP fluctuation.</p> <p>RESULTS: Forty-one eyes were treated by SLT, 19 eyes in the 180-degree group and 22 eyes in the 360-degree group. The mean reduction in IOP at 2 years was 28% in 180-degree group and 35% in 360-degree SLT group. After the SLT, the 360-degree SLT group had a lower IOP fluctuation compared with the 180-degree SLT group over the follow-up period of months 6 to 24. The percentage of eyes with intervisit IOP fluctuation (SD) ≤ 2 mm Hg during the same follow-up period was significantly greater in 360-degree SLT treatment group (86%) than in the 180-degree SLT treatment group (52%), $P=0.03$. The odds of achieving IOP fluctuation ≤ 2 mm Hg were 5.7 times greater with 360 degrees than with 180-degree SLT during the follow-up period of months 6 to 24.</p> <p>CONCLUSIONS: This study suggests that 360-degree SLT is more efficacious in achieving smaller IOP fluctuations than treatment with 180-degree SLT.</p>
82	Peer reviewed Article	Clinical outcomes Secondary Glaucoma	Selective laser trabeculoplasty--new possibilities in glaucoma treatment	Výborný P, Sicáková S	Oční klinika 1. lékařské fakulty Univerzity Karlovy a Ústřední vojenské nemocnice, Praha, Czech Republic	Cesk Slov Oftalmol. 2009 Jan;65(1):8-11.	2009	Czech	<p>The authors introduced into the clinical practice their own modification of the treatment by means of selective laser trabeculoplasty (SLT) in glaucoma patients. The SLT spots are burn in the extent of 270 degrees circumferentially in the anterior chamber angle (1.0 mJ, 80 spots, 400 microm). In the first group of 569 eyes with primary open angle glaucoma (POAG), followed up retrospectively and irregularly, at the control visit one year after the treatment, it was in 357 eyes possible, due to favorable decrease of the intraocular pressure (IOP), to decrease the medication from combined therapy to monotherapy, or to decrease the frequency of the application of antiglaucomatics, or to decrease their concentration. In other 197 eyes, the IOP was stabilized, but it was not possible to change the therapy, and in 15 cases, due to dissatisfactory effect of the treatment, the trabeculectomy was necessary. In the second group of POAG patients (133 eyes) followed up prospectively 1, 3, 6 and 12 months after the treatment, the decrease of the IOP from 21.1 \pm 4.5 mm Hg to 17.8 \pm 3.2 mm Hg after one month ($P < 0.0001$), to 18.6 \pm 3.6 mm Hg after 3 months, to 17.8 \pm 3.1 mm Hg after 6 months, and to 17.7 \pm 2.8 mm Hg after 12 months was established. Good effect to the decrease the IOP was proved in pseudoexfoliative glaucoma as well. In the pigmentary glaucoma, the decrease of the IOP was found to be temporary, and on the contrary, in two cases, shortly after the SLT, considerable elevation of the IOP was found with the necessity to perform the trabeculectomy. The SLT may be used as the primary treatment in newly diagnosed POAG with advance, as well as possibility to terminate the treatment in cases when the glaucoma diagnosis is dubious.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
83	Peer reviewed Article	Clinical outcomes Secondary Glaucoma	Two-year outcomes of selective laser trabeculoplasty in open-angle glaucoma and ocular hypertension	Zaninetti M, Ravinet E	Hôpital ophtalmique Jules-Gonin, Lausanne, Suisse.	J Fr Ophtalmol. 2008 Dec;31(10):981-6.	2009	French	<p>BACKGROUND: Selective laser trabeculoplasty (SLT) is a relatively new treatment strategy for the treatment of glaucoma. Its principle is similar to that of argon laser trabeculoplasty (ALT), but may lead to less damage to the trabecular meshwork.</p> <p>METHODS: We assessed the 2-year efficacy of SLT in a noncomparative consecutive case series. Any adult patient either suspected of having glaucoma or with open-angle glaucoma, whose treatment was judged insufficient to reach target intraocular pressure (IOP), could be recruited. IOP and number of glaucoma treatments were recorded over 2 years after the procedure.</p> <p>RESULTS: Our sample consisted of 44 consecutive eyes of 26 patients, aged 69+/-8 years. Eyes were treated initially on the lower 180 degrees . Three of them were retreated after 15 days on the upper 180. Fourteen eyes had ocular hypertension, 17 primary open-angle/normal-tension glaucoma, 11 pseudoexfoliation (PEX) glaucoma, and two pigmentary glaucoma. Thirty-six eyes had previously been treated and continued to be treated with topical anti-glaucoma medication, ten had had prior ALT, nine iridotomy, and 12 filtering surgery. The 2-year-follow up could not be completed for eight eyes because they needed filtering surgery. In the remaining 36 eyes, IOP decreased by a mean of 17.2%, 3.3 mmHg, (19.2+/-4.7 to 15+/-3.6 mmHg) after 2 years (p<0.001). As a secondary outcome, the number of glaucoma treatments decreased from 1.44 to 1.36 drops/patient. Other results according to subgroups of patients are analyzed: the greatest IOP decrease occurred in eyes that had never been treated with anti-glaucoma medication or with PEX glaucoma. SLT was probably valuable in a few eyes after filtering surgery; however, the statistical power of the study was not strong enough to draw a firm conclusion. When expressed in survival curves after 2 years, however, only 48% and 41% of eyes experienced a decrease of more than 3 mmHg or more than 20% of preoperative intraocular pressure, respectively.</p> <p>CONCLUSION: SLT decreases IOP somewhat for at least 2 years without an increase in topical glaucoma treatment. However, it cannot totally replace topical glaucoma treatment. In the future, patient selection should be improved to decrease the cost/effectiveness ratio.</p>
84	Peer reviewed Article	Basic Science Review	Pathophysiology of selective laser trabeculoplasty.	Murthy S, Latina MA.	Massachusetts Eye and Ear Infirmary, Boston, MA, USA	Int Ophthalmol Clin. 2009 Winter;49(1):89-98	2009	English	Review of pathophysiological mechanisms underlying SLT

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
85	Peer reviewed Article	Basic Science	Laser Trabeculoplasty Induces Changes in the Trabecular Meshwork Glycoproteome: A Pilot Study	Amelinckx A, Castello M, Arrieta-Quintero E, Lee T, Salas N, Hernandez E, Lee RK, Bhattacharya SK, Parel JM.	Bascom Palmer Eye Institute, Ophthalmic Biophysics Center, University of Miami Miller School of Medicine, Miami, Florida, USA and Vision CRC, Sydney, Australia.	J Proteome Res 2009;June 3 (published online)	2009	English	Laser trabeculoplasty (LT) is a commonly used modality of treatment for glaucoma. The mechanism by which LT lowers the intraocular pressure (IOP) is unknown. With the use of cat eyes, selective laser trabeculoplasty (SLT) with a Q-switched frequency doubled Nd:YAG laser was used to treat the trabecular meshwork (TM). Laser treated TM was then subjected to proteomic analysis for detection of molecular changes and histological analysis for the detection of structural and protein expression patterns. In addition, the protein glycosylation patterns of laser treated and nontreated TM was assessed and differentially glycosylated proteins were proteomically identified. SLT laser treatment to the TM resulted in elevated glycosylation levels compared to nonlasered TM. TM laser treatment also resulted in protein expression levels changes of several proteins. Elevated levels of biglycan, keratocan and prolargin were detected in laser treated TM compared to nonlasered controls. Further investigation is anticipated to provide insight into how glycosylation changes affect TM proteins and TM regulation of aqueous outflow in response to laser trabeculoplasty.
86	Peer reviewed Article	SLT vs ALT	Argon laser trabeculoplasty versus selective laser trabeculoplasty	Pham H, Mansberger S, Brandt JD, Damji K, Ramulu PY, Parrish RK.	Devers Eye Institute, Portland, Oregon, USA.	Surv Ophthalmol. 2008 Nov-Dec;53(6):641-6	2008	English	The clinical role of laser trabeculoplasty remains a controversial topic with many different opinions. In the following three viewpoints the authors have taken contrasting positions on whether argon laser trabeculoplasty remains the “gold standard” or has been supplanted by selective laser trabeculoplasty. Questions are raised regarding the position of laser trabeculoplasty within the stepping of the treatment paradigm for open-angle glaucoma. The appropriate use of laser trabeculoplasty at different stages of disease severity is analyzed. A broader perspective with new insights on laser trabeculoplasty from these articles will hopefully lead to a better understanding of its clinical role in practice.

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
87	Peer reviewed Article	Secondary Glaucoma Clinical outcomes	The effect of selective laser trabeculoplasty on intraocular pressure in patients with intravitreal steroid-induced elevated intraocular pressure	Rubin B, Taglienti A, Rothman RF, Marcus CH, Serle JB.	Department of Ophthalmology, Mount Sinai School of Medicine, New York, NY, USA.	J Glaucoma. 2008 Jun-Jul;17(4):287-92	2008	English	<p>PURPOSE: To assess effectiveness of selective laser trabeculoplasty (SLT) in lowering intraocular pressure (IOP) in patients with steroid-induced elevated IOP.</p> <p>METHODS: Retrospective review of 7 patients (7 eyes) with IOP elevation after intravitreal triamcinolone acetonide (4.0 mg/0.1 mL) injections for macular edema (6 patients) or central retinal vein occlusion (1 patient). Three patients had preexisting open angle glaucoma; 2 patients had preexisting ocular hypertension. Time between intraocular corticosteroid injection and subsequent increased IOP ranged from 5 to 29 weeks. After unsuccessful maximum tolerated medical therapy, patients underwent unilateral SLT between April 2003 and June 2005. IOP was measured 4 weeks prelaser; on the day of laser; within 3 weeks, and at 1, 3, and 6 months postlaser. Two-sample t test was used for analysis.</p> <p>RESULTS: The pre-SLT and post-SLT IOP measurements were the major outcome measures used to define the relative success of the SLT procedure. Seven patients were taking 4.0+/-0.8 ocular hypotensive medications before SLT. Preoperative IOP (mm Hg+/-SD) 38.4+/-7.3 decreased postoperative to 25.6+/-7.1 within 3 weeks (P<0.003), 25.9+/-8.8 at 1 month (P<0.007), 23.9+/-10.6 at 3 months (P<0.006), and 15.7+/-2.2 at 6 months (P<0.001). Four patients underwent a second SLT procedure. Two patients failed after the 3-month visit. IOP in fellow eyes of all patients was unchanged (P>0.080).</p> <p>CONCLUSIONS: SLT lowered (P<0.007) IOP in 5 eyes of 7 patients with steroid-induced increased IOP from 3 weeks to 6 months postoperative. Two patients required additional surgical procedures. Repeat SLT treatments may be necessary. SLT is a temporizing procedure to consider in patients with steroid-induced elevated IOP.</p>
88	Peer reviewed Article	Predictive factors Clinical Outcomes	Development of a prediction rule to estimate the probability of acceptable intraocular pressure reduction after selective laser trabeculoplasty in open-angle glaucoma and ocular hypertension	Mao AJ, Pan XJ, McIlraith I, Strasfeld M, Colev G, Hutnik C.	Department of Ophthalmology, Ivey Eye Institute, St Joseph's Hospital, Lawson Health Research Institute, University of Western Ontario.	J Glaucoma. 2008 Sep;17(6):449-54	2008	English	<p>PURPOSE: To develop and validate a prediction rule to estimate the probability of acceptable intraocular pressure (IOP) reduction after selective laser trabeculoplasty (SLT) in ocular hypertension and open-angle glaucoma.</p> <p>PATIENTS AND METHODS: The study population was derived from a cohort of 220 patients with ocular hypertension, open-angle glaucoma, or normal tension glaucoma. A > or =20% reduction in IOP (mm Hg) from the baseline IOP at 6 months after SLT was considered treatment success. Logistic multivariate regression modeling was performed to develop a prediction rule.</p> <p>RESULTS: In multivariate logistic regression analyses, pre-SLT IOP and maximum IOP were identified as independent predictors for > or =20% IOP reduction at 6 months with adjusted odds ratios of 1.3 and 0.9, respectively, controlling for sex, diagnosis, pigment of anterior chamber, and washout of eye drops. The area under receiver operator characteristic curve was 0.716. Calibration of this prediction rule showed good agreement between predicted and observed probabilities of acceptable IOP reduction. If a probability of acceptable IOP reduction of 50% or greater is used as the minimal clinical threshold for treatment, the prediction rule had a sensitivity and specificity of 91.3% and 30.4%, respectively.</p> <p>CONCLUSIONS: SLT efficacy is positively associated with IOP elevation before SLT treatment and adversely associated with the maximum IOP ever recorded in history. Pigmentation of the anterior chamber angle, diagnosis, washout of eye drops, and sex are not associated with SLT treatment efficacy. This prediction rule should be further validated with a comparable prospective clinical study cohort.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
89	Peer reviewed Article	Meth-odology Clinical Outcomes	Evaluation of a Modified Protocol for Selective Laser Trabeculoplasty.	George MK, Emerson JW, Cheema SA, McGlynn R, Ford BA, Martone JF, Shields MB, Wand M.	Department of Ophthalmology and Visual Science, Yale University School of Medicine New Haven, CT, Department of Statistics, Yale University, New Haven, CT , Department of Ophthalmology, University of Connecticut, Farmington, CT, Department of Ophthalmology, University of Calgary, Calgary, Alberta, Canada.	J Glaucoma. 2008 April-May;17(3):197-202.	2008	English	<p>PURPOSE: To compare the intraocular pressure (IOP) response to a modified protocol for selective laser trabeculoplasty (SLT) to standard protocols for SLT and argon laser trabeculoplasty (ALT).</p> <p>MATERIALS AND METHODS: A retrospective study of 318 eyes of 284 patients diagnosed with either primary open angle, pigmentary or pseudoexfoliation glaucoma who underwent laser trabeculoplasty from September 1997 to September 2005. One hundred and two patients, who underwent a modified SLT protocol with 100 overlapping laser spots over 180 degrees of trabecular meshwork were compared with 89 patients who received SLT with 100 nonoverlapping spots over 360 degrees and another 127 patients who received ALT with 50 spots over 180 degrees. IOPs were measured at baseline and postoperatively at 1 hour, 6 weeks, 4 months, and 14 months. Regression models, based on the observed data, were used to predict the fall in IOP in the 3 groups, controlling for differences in baseline pressure.</p> <p>RESULTS: The IOP response to overlapping SLT was significantly worse than to nonoverlapping SLT or ALT, both of which had similar responses. Baseline IOP was the only preoperative factor that predicted response to ALT ($P<0.0001$) and nonoverlapping SLT ($P=0.0019$) at all follow-up times. There were no statistically significant predictive factors for IOP reduction in the overlapping SLT group.</p> <p>CONCLUSIONS: Overlapping application of SLT results in a poorer IOP response compared with ALT and nonoverlapping SLT.</p>
90	Peer reviewed Article	Clinical outcomes Secondary Glaucoma Review	The place of SLT in managing glaucoma	Nordmann JP	Centre du Glaucome, CHNO des Quinze-Vingts, Paris, France	J Fr Ophtalmol. 2008 Jul;31(6 Pt 2):2569-73	2008	French	<p>Selective laser trabeculoplasty (SLT) is effective in reducing intraocular pressure (IOP) in glaucomatous patients and patients with ocular hypertension. Equivalent to argon laser trabeculoplasty in terms of IOP reduction, SLT has the advantage of preserving surrounding structures. Easy and rapid to perform, SLT may be an interesting therapeutic approach in the management of glaucoma.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
91	Peer reviewed Article	Basic Science Secondary Glaucoma	Matrix metalloproteinases and their tissue inhibitors after selective laser trabeculoplasty in pseudoexfoliative secondary glaucoma	Cellini M, Leonetti P, Strobbe E, Campos EC	Department of Surgery Science and Anesthesiology, Ophthalmology Service, University of Bologna, Italy.	BMC Ophthalmol. 2008 Oct 21;8:20	2008	English	<p>BACKGROUND: The aim of this study was to assess changes in metalloproteinases (MMP-2) and tissue inhibitor of metalloproteinases (TIMP-2) following selective laser trabeculoplasty (SLT) in patients with pseudoexfoliative glaucoma (PEXG).</p> <p>METHODS: We enrolled 15 patients with PEXG and cataracts (PEXG-C group) and good intraocular pressure (IOP) controlled with beta-blockers and dorzolamide eye drops who were treated by cataract phacoemulsification and 15 patients with pseudoexfoliative glaucoma (PEXG-SLT group). The PEXG-SLT patients underwent a trabeculectomy for uncontrolled IOP in the eye that showed increased IOP despite the maximum drug treatment with beta-blockers and dorzolamide eye drops and after ineffective selective laser trabeculoplasty (SLT). The control group consisted of 15 subjects with cataracts. Aqueous humor was aspirated during surgery from patients with PEXG-C, PEXG-SLT and from matched control patients with cataracts during cataract surgery or trabeculectomy. The concentrations of MMP-2 and TIMP-2 in the aqueous humor were assessed with commercially available ELISA kits.</p> <p>RESULTS: In PEXG-SLT group in the first 10 days after SLT treatment a significant reduction in IOP was observed: 25.8 ± 1.9 vs 18.1 ± 1.4 mm/Hg ($p < 0.001$), but after a mean time of 31.5 ± 7.6 days IOP increased and returned to pretreatment levels: 25.4 ± 1.6 mm/Hg ($p < 0.591$). Therefore a trabeculectomy was considered necessary. The MMP-2 in PEXG-C was 57.77 ± 9.25 microg/ml and in PEXG-SLT was 58.52 ± 9.66 microg/ml ($p < 0.066$). TIMP-2 was 105.19 ± 28.53 microg/ml in PEXG-C and 105.96 ± 27.65 microg/ml in PEXG-SLT ($p < 0.202$). The MMP-2/TIMP-2 ratio in the normal subjects was 1.11 ± 0.44. This ratio increase to 1.88 ± 0.65 in PEXG-C ($p < 0.001$) and to 1.87 ± 0.64 in PEXG-SLT ($p < 0.001$). There was no statistically significant difference between the PEXG-C and PEXG-SLT ratios ($p < 0.671$).</p> <p>CONCLUSION: This case series suggest that IOP elevation after SLT can be a serious adverse event in some PEXG patients. The IOP increase in these cases would be correlated to the failure to decrease the TIMP-2/MMP-2 ratio.</p>
92	Peer reviewed Article	Review	Selective laser trabeculoplasty: a review	Realini T.	Department of Ophthalmology, West Virginia University, Morgantown, WV, USA.	J Glaucoma. 2008 Sep;17(6):497-502	2008	English	<p>The introduction of selective laser trabeculoplasty (SLT) has renewed interest in laser trabeculoplasty for the reduction of intraocular pressure (IOP) in eyes with glaucoma. This review was undertaken to address frequently raised issues pertinent to SLT in clinical practice. On the basis of the peer-reviewed medical literature, SLT demonstrates equivalent efficacy and comparable safety to argon laser trabeculoplasty, and is also equally as effective as topical medical therapy. SLT's safety profile includes mild and transient inflammation, ocular pain, and a small risk of moderate IOP elevations after the procedure. The mechanism of action of SLT is not known. SLT delivers less energy to the trabecular meshwork and generates less damage to angle tissues. Whether this renders SLT more repeatable than argon laser trabeculoplasty has not been evaluated in published data. SLT seems to be a safe and effective means of IOP reduction in eyes with glaucoma, and can reasonably be applied as primary or adjunctive therapy.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
93	Peer reviewed Article	SLT vs ALT	What should we think? Is selective trabeculoplasty more effective than conventional argon laser trabeculoplasty?	Lefrançois A	Unité 'ophtalmologie, hôpital Cochin, Paris, France	J Fr Ophtalmol. 2007 May;30(5 Pt 2):3574-8.	2007	French	The long-term effectiveness of selective laser trabeculoplasty is equivalent to argon laser trabeculoplasty. Easy to use and relatively safe, selective laser trabeculoplasty is a good alternative for medical treatment, particularly in cases of poor compliance.
94	Peer reviewed Article	Adjunct Therapy Clinical outcomes	Clinical results of selective laser trabeculoplasty as adjunctive treatment for primary open-angle glaucoma patients	Saito Y, Higashide T, Sugiyama K.	Department of Ophthalmology and Visual Science, Kanazawa University School of Medical Science, Japan.	Nippon Ganka Gakkai Zasshi. 2007 Dec;111(12):953-8	2007	Japanese	<p>PURPOSE: We retrospectively investigated the intraocular pressure (IOP) lowering effects of selective laser trabeculoplasty (SLT) as adjunctive treatment for glaucoma patients receiving maximal medical therapy.</p> <p>METHODS: Thirty-four eyes of 34 patients with primary open-angle glaucoma who had no prior surgical therapy and has received SLT for the first time were included in this study. The results of their laser treatment were analyzed retrospectively. The age of patients was 61.1 +/- 13.0 (mean +/- standard deviation) years, the follow-up period was 7.1 +/- 4.8 months, and the number of medications before SLT was 3.5 +/- 0.7. A total of 57.0 +/- 11.5 spots were placed over 180 degrees of the trabecular meshwork at energy levels ranging from 0.5 to 1.4 mJ per pulse.</p> <p>RESULTS: The IOP significantly decreased from 20.9 +/- 3.4 mmHg at baseline to 18.7 +/- 4.6 mmHg at 1 month after SLT (p < 0.01). Kaplan-Meier survival analysis showed that success rates at 6 and 12 months after SLT were 48.6% and 23.2%, respectively.</p> <p>CONCLUSIONS: Although SLT significantly decreased the IOPs in Japanese patients with primary open-angle glaucoma receiving maximal medical therapy, the effects may be for a limited time only, as adjunctive treatment.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
95	Peer reviewed Article	Predictive factors Clinical Outcomes	Predictive factors of successful selective laser trabeculoplasty in open-angle glaucoma	Gracner T, Falez M, Gracner B, Pahor D.	Universitätsk-rankenhaus Maribor, Augenabteilung, Slowenien	Klin Monatsbl Augenheilkd. 2007 Dec;224(12):922-6.	2007	German	<p>BACKGROUND: The aim of this study was to determine factors that predict successful selective laser trabeculoplasty (SLT) in open-angle glaucoma (OAG).</p> <p>PATIENTS AND METHODS: In 122 eyes suffering from OAG, treatment was carried out with a frequency-doubled, Q-switched Nd:YAG laser (532 nm). The intraocular pressure (IOP) was measured before the treatment and 1, 3, 6, 12, 18, 24, 30, 36, 42, 48, 54, 60, 66, 72, 78 and 84 months thereafter. Success was defined as an IOP reduction exceeding 20 % of the pretreatment IOP. Correlations between successful SLT and baseline IOP, age, sex, hypertension, diabetes mellitus, family history of glaucoma, previous anterior segment surgery, the grade of trabecular meshwork pigmentation, laser energy used, and local antiglaucoma therapy were determined.</p> <p>RESULTS: The mean follow-up time was 43.4 months (SD: 25.6). The mean pretreatment IOP was 22.5 mmHg (SD: 2.8). The success rate after 12 months determined from the Kaplan-Meier survival analysis was 88 %, after 24 months 79 %, after 36 months 67 %, after 48 months 58 %, after 60 months 49 % and after 84 months 48 %. We found statistically significant negative correlation between successful SLT and the grade of trabecular meshwork pigmentation ($r = -0.234$; $p = 0.01$), I14:I19diabetes mellitus ($r = -0.223$; $p = 0.014$). We found no statistically significant correlations between successful SLT and baseline IOP, age, sex, hypertension, family history of glaucoma, previous anterior segment surgery, laser energy used, local antiglaucoma therapy.</p> <p>CONCLUSION: SLT success in OAG with a mean follow-up time of 43.4 months was significantly predicted by the lower grade of trabecular meshwork pigmentation and the absence of diabetes mellitus.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
96	Peer reviewed Article	SLT - post ALT treatment Clinical Outcomes	Selective laser trabeculoplasty retreatment after prior argon laser trabeculoplasty: 1-year results.	Birt CM	Department of Ophthalmology and Vision Sciences, University of Toronto, Ontario, Canada.	Can J Ophthalmol. 2007 Oct;42(5):715-9	2007	English	<p>BACKGROUND: Argon laser trabeculoplasty (ALT) and selective laser trabeculoplasty (SLT) are treatments for open-angle glaucoma. Many patients have previously received ALT but could benefit from further treatment. The purpose of this study was to examine whether SLT provided clinical benefit for patients who had previously received complete argon treatment. METHODS: This was a prospective, partially randomized, comparison study. The study compared the effect after 1 year of SLT in patients with open-angle glaucoma (primary, pigmentary, or pseudoexfoliation) who had previously received 360 degrees of ALT with the effect of laser treatment (ALT or SLT) given for the first time in patients with this condition. Ninety-six subjects were given 180 degrees of laser trabeculoplasty. When both eyes qualified for treatment, the first eye treated was included in the analysis. Twenty-seven subjects were treated with SLT after previously receiving 360 degrees of ALT therapy; the remainder were given their first laser treatment, 30 being randomly assigned by coin toss to receive SLT and 39 to receive ALT.</p> <p>RESULTS: The mean intraocular pressure (IOP) before treatment was 21.5 mm Hg (SLT after ALT), 22.9 mm Hg (SLT), and 22.0 mm Hg (ALT), with no statistical difference among the groups ($p > 0.05$). The mean IOP at 1 year was 16.7 mm Hg (SLT after ALT), 17.1 mm Hg (SLT), and 16.4 mm Hg (ALT). The IOP for all 3 groups was statistically significantly lower than at baseline ($p < 0.001$), but there were no differences among the groups in this respect ($p > 0.05$). At 1 year, the percentage IOP reductions from baseline were 23% (SLT), 19.3% (SLT after ALT), and 24% (ALT). There were no differences among the groups in the number of medications used before the laser, although there was a small but statistically significant decrease in the number of medications used before or after the laser treatment in both the SLT and the SLT after ALT group, but not the ALT group.</p> <p>INTERPRETATION: SLT retreatment can produce a clinically useful decrease in IOP at 1 year, similar to that obtained by ALT, in patients who have had prior argon laser treatment. SLT may be a useful adjunctive therapy when 360 degrees of ALT has already been performed.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
97	Peer reviewed Article	Meth- odology Clinical Outcomes	Mechanisms of action and efficacy of argon laser trabeculoplasty and selective laser trabeculoplasty	Stein JD, Challa P	Department of Ophthalmology, Duke University Medical Center, Durham, North Carolina, USA.	Curr Opin Ophthalmol. 2007 Mar;18(2):140-5	2007	English	<p>PURPOSE OF REVIEW: Since the 1980s, laser trabeculoplasty has served as an effective way to lower intraocular pressure in patients with primary or secondary open angle glaucomas, both as an initial therapy or in conjunction with hypotensive medications. This manuscript will describe the proposed mechanisms of action of argon laser trabeculoplasty and selective laser trabeculoplasty, as well as review current studies of the therapeutic effect of these interventions.</p> <p>RECENT FINDINGS: The exact mechanisms by which argon laser and selective laser trabeculoplasty lower intraocular pressure are not known. There are several theories, however, and we discuss the three most common ones: the mechanical theory, the cellular (biologic) theory, and the cell division theory. Since both lasers are applied to the same tissue and produce similar results, they most likely produce their effects in comparable ways. We also describe the results of several studies comparing these devices. Most show them to be equally effective at lowering intraocular pressure; however, there are a few circumstances when selective laser trabeculoplasty may be a better option than argon laser trabeculoplasty.</p> <p>SUMMARY: Argon laser and selective laser trabeculoplasty are safe and effective procedures for lowering intraocular pressure. The results of ongoing clinical trials will help further define their role in the management of patients with open angle glaucoma.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
98	Peer reviewed Article	Clinical Outcomes SLT vs ALT	Pressure reduction after selective laser trabeculoplasty with two different laser systems and after argon laser trabeculoplasty--a controlled prospective clinical trial on 284 eyes	Best UP, Domack H, Schmidt V	Augenlinik und Augenlaserklinik Mainfranken	Klin Monatsbl Augenheilkd. 2007 Mar;224(3):173-9	2007	German	<p>BACKGROUND: Selective laser trabeculoplasty (SLT) is a new method to reduce intraocular pressure in eyes with primary open angle glaucoma. The laser parameters of a Q-switched, frequency-doubled Nd:YAG-laser are set to selectively target pigmented trabecular meshwork cells without visible damage to the adjacent non-pigmented tissue. SLT acts non-thermally, the intracellular microdisruptions triggered by the laser are confined to the targeted cells, the laser pulses are so short that heat caused within the targeted cells does not have time to spread to the surrounding tissue. A controlled prospective randomised clinical study was conducted to compare the long-term results, safety and efficacy after SLT with two different laser systems and after ALT in the treatment of ocular hypertension and medically uncontrolled open angle glaucoma.</p> <p>PATIENTS AND METHODS: About two years ago the authors performed a selective laser trabeculoplasty in 119 eyes using the SLT laser unit Otello (Glaute AG, ARC, EC), here named as SLT-I, and in 124 eyes using the SLT laser unit Selecta II (Lumenis, Palo Alto, CA), here named as SLT-II. In 41 eyes the authors performed argon laser trabeculoplasties using the argon laser Argus (Aesculap Meditec, EC).</p> <p>RESULTS: Two months after treatment mean IOP reduction from baseline was 1.9 mmHg or, respectively, 8.8 % after SLT with the SLT-System I, 2.0 mmHg or, respectively, 9.5 % after SLT with SLT-System II, and 2.2 mmHg or, respectively, 9.9 % after ALT with the argon laser. Twelve months after LTP mean pressure reductions were 1.7 mmHg (7.9 %) after SLT-I, 1.8 mmHg (8.5 %) after SLT-II, and 2.1 mmHg (9.4 %) after ALT. The response curve of the eyes with SLT-I greatly resembled that of the eyes with SLT-II and those eyes with ALT.</p> <p>CONCLUSIONS: Pressure reduction was highest after ALT, followed by SLT-II, in SLT-I reduction was the least, but the differences were not significant. Our findings did not correspond with those of other authors reporting an average IOP reduction of 25 % after SLT and ALT. SLT has shown reasonable efficacy in lowering IOP in eyes with ocular hypertension and primary open angle glaucoma, SLT achieves about the same level of IOP reduction compared with ALT. As a result of the preservation of the structure of the trabecular meshwork and low rate of complications, SLT is a safe alternative to ALT. The exact biological effect induced with SLT is still not yet understood. For the early glaucoma stages SLT provides an alternative to drug treatment, for the advanced glaucomas SLT is an additional option for further pressure reduction. More long-term follow-up studies are needed to determine whether the IOP lowering effect is sustained over time, and to assess the efficacy of repeated SLT.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
99	Peer reviewed Article	Clinical Outcomes	Selective laser trabeculoplasty in phakic and pseudophakic eyes.	Werner M, Smith MF, Doyle JW.	University of Florida, Department of Ophthalmology, Gainesville, FL, USA.	Ophthalmic Surg Lasers Imaging. 2007 May-Jun;38(3):182-8.	2007	English	<p>BACKGROUND AND OBJECTIVE: To evaluate the effect of pseudophakia on the success of selective laser trabeculoplasty in lowering intraocular pressure (IOP).</p> <p>PATIENTS AND METHODS: In this retrospective, nonrandomized clinical trial, a chart review of all patients who underwent selective laser trabeculoplasty from September 2002 to June 2004 using a frequency-doubled Q-switched 532-nm Nd:YAG laser was performed. Changes in IOP and statistical significance were determined at each follow-up period. Average decrease in IOP and success rates for phakic and pseudophakic eyes were compared statistically at each time period.</p> <p>RESULTS: In the phakic group, mean IOP decreased from 18.1 to 15.5 mm Hg ($P < .0005$) and mean glaucoma medication use decreased from 2.1 to 1.6 medications after 24 months of follow-up. In the pseudophakic group, mean IOP decreased from 18.3 to 15.2 mm Hg ($P < .005$) and mean glaucoma medication use decreased from 2.2 to 1.6 medications. Success rates ranged from 54% to 67% in the phakic group and 52% to 65% in the pseudophakic group. No statistically significant difference between phakic and pseudophakic eyes in decreased IOP or success rates was seen at any time point ($P > .05$). No significant complications occurred in either group.</p> <p>CONCLUSIONS: Selective laser trabeculoplasty is effective in lowering IOP in both phakic and pseudophakic patients.</p>
100	Peer reviewed Article	Clinical Outcomes	Selective laser trabeculoplasty in the treatment of primary open-angle glaucoma	Qian SH, Sun XH.	Eye & ENT Hospital, Fudan University, Shanghai, China	Zhonghua Yi Xue Za Zhi. 2007 Jan 9;87(2):118-20	2007	Chinese	<p>OBJECTIVE: To investigate the efficacy and safety of selective laser trabeculoplasty (SLT) in the treatment of primary open angle glaucoma (POAG).</p> <p>METHODS: In a prospective non-randomized clinical study, 63 patients (85 eyes) with POAG and medically uncontrolled intraocular pressure (IOP) underwent SLT. A total of 50 \pm 5 adjacent but nonoverlapping spots were placed over inferior 180 degrees of the trabecular meshwork using a 532 nm, Q-switched, Nd: YAG laser at energy levels ranging from 0.6 approximately 1.8 mJ per pulse. After SLT, the eyes continued to receive the identical drug regimen. All patients were observed before and 1, 2 hours, 1, 7 and 14 days, and 1, 2, 3, 6, 9, 12, 18, and 24 months after the treatment.</p> <p>RESULTS: The average pre-operative IOP was (25 \pm 4) mm Hg (1 mm Hg = 0.133 kPa). The mean IOP reduction from baseline were 8.1 mm Hg (32.0%) 1 day after the SLT, 5.6 mm Hg (22.1%) 7 days after the SLT, 4.7 mm Hg (18.6%) 14 days after the SLT, 5.5 mm Hg (21.7%) 1 month after the SLT, 5.1 mm Hg (20.2%) 2 months after the SLT, 5.9 mm Hg (23.3%) 3 months after the SLT, 5.2 mm Hg (20.6%) 6 months after the SLT, 4.0 mm Hg (15.8%) 9 months after the SLT, 4.2 mm Hg (16.6%) 12 months after the SLT, 3.8 mm Hg (15.0%) 18 months after the SLT, and 3.3 mm Hg (13.0%) 24 months after the SLT ($P < 0.01$ or 0.05). Adverse reactions were minimal, including conjunctival injection, mild anterior chamber reaction, and transient pressure spike.</p> <p>CONCLUSION: SLT is a safe, and effective method of reducing IOP in POAG patients.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
101	Peer reviewed Article	Review SLT vs ALT	Selective vs Argon laser trabeculoplasty: controversy in evolution.	Girkin CA	Department of Ophthalmology, School of Medicine, and University of Alabama at Birmingham, Birmingham, Alabama	Am J Ophthalmol. 2007 Jul;144(1):120-1.	2007	English	Editorial
102	Peer reviewed Article	Review	Selective laser trabeculoplasty.	Barkana Y, Belkin M.	Glaucoma Unit, Department of Ophthalmology, Assaf Harofeh Medical Center, Zerifin, Israel.	Surv Ophthalmol. 2007 Nov-Dec;52(6):634-54. Links	2007	English	Despite extended and substantial clinical experience with laser trabeculoplasty, it is used relatively infrequently. Reasons include associated significant tissue disruption with consequent reluctance from re-treatment, lack of full understanding of the mechanism by which intraocular pressure (IOP) is reduced, and known complications. Selective laser trabeculoplasty results in selective absorption of energy by trabecular pigmented cells, sparing adjacent cells and tissues from thermal damage. Morphologic studies demonstrated minimal tissue alteration following treatment with selective laser trabeculoplasty. Clinical studies suggest it is efficacious in lowering IOP, as initial treatment or when medical therapy is insufficient, with response rates after 1 year ranging from 59% to 96%. Average reduction in IOP has been reported from 18% to 40%. Comparative studies suggested similar IOP reduction by argon laser trabeculoplasty and selective laser trabeculoplasty. Observed side effects have been mostly transient and minor. We review the current knowledge of the mechanisms and clinical outcome of selective laser trabeculoplasty.
103	Peer reviewed Article	SLT vs ALT	Argon laser trabeculoplasty or selective laser trabeculoplasty in the treatment of open-angle glaucoma	Bojic L, Ivanisevic M, Mandic Z.	Klinika za ocne bolesti, Klinicka bolnica Split, Zagreb, Hrvatska	Acta Med Croatica. 2006;60(2):97-9.	2006	Croatian	Argon laser trabeculoplasty (ALT) and selective laser trabeculoplasty (SLT) are effective treatment modalities for intraocular pressure (IOP) lowering in open angle glaucoma patients. SLT and ALT produce equivalent IOP reduction. The choice of either option will depend on the state of glaucoma, previous and current treatment, side effects and patient's reference. Preservation of the angle trabecular meshwork structures and effective retreatment for IOP lowering after ALT has failed, offer some theoretical advantage of SLT.
104	Peer reviewed Article	SLT vs ALT	Selective laser trabeculoplasty versus argon laser trabeculoplasty: results from a 1-year randomised clinical trial.	Damji KF, Bovell AM, Hodge WG, Rock W, Shah K, Buhrmann R, Pan YI.	University of Ottawa Eye Institute, Ottawa, Ontario, Canada.	Br J Ophthalmol. 2006 Dec;90(12):1490-4. Epub 2006 Aug 9.	2006	English	AIMS: To compare selective laser trabeculoplasty (SLT) and argon laser trabeculoplasty (ALT), in terms of intraocular pressure (IOP) lowering, in patients with open-angle glaucoma. METHODS: 176 eyes of 152 patients were enrolled in this study, 89 in the SLT and 87 in the ALT groups. Patients were randomised to receive either SLT or ALT treatment to 180 degrees of the trabecular meshwork. Patients were followed up to 12 months after treatment. The main outcome measured was IOP lowering at 12 months after treatment, compared between the SLT and ALT groups. RESULTS: No significant difference ($p = 0.846$) was found in mean decrease in IOP between the SLT (5.86 mm Hg) and ALT (6.04 mm Hg) groups at 1 year or at any other time points, nor were there any significant differences in the rate of early or late complications between the two groups. CONCLUSIONS: SLT is equivalent to ALT in terms of IOP lowering at 1 year, and is a safe and effective procedure for patients with open-angle glaucoma.

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
105	Peer reviewed Article	SLT vs ALT	Laser trabeculoplasty trends with the introduction of new medical treatments and selective laser trabeculoplasty	Rachmiel R, Trope GE, Chipman ML, Gouws P, Buys YM.	Department of Ophthalmology and Visual Sciences, Toronto Western Hospital, Toronto, Ontario, Canada.	J Glaucoma. 2006 Aug;15(4):306-9	2006	English	<p>PURPOSE: To correlate trends of laser trabeculoplasties (LTPs) with the introduction of medical therapies for glaucoma and to assess whether these trends changed after the introduction of selective laser trabeculoplasty (SLT) in 2001.</p> <p>METHODS: A retrospective analysis of LTP numbers, filtration surgeries, glaucoma medications dispensed, and population distribution by age in Ontario, Canada, between April 1992 and March 2005.</p> <p>RESULTS: The number of LTP per 1,000 persons estimated to have primary open angle glaucoma (POAG) increased from 138.05 in 1992 to a maximum of 149.23 in 1996 (8.1% increase, 1.96% annual increase) and then steadily decreased to 70.65 in 2001 (47.3% decrease, 14% annual decrease). From 2001 to 2004, the LTP rate increased to 162.54 (230% increase, 32% annual increase). The number of filtration surgeries per 1,000 persons estimated to have POAG steadily decreased from 1996 to 2004 by 21.42% (2.4% annual decrease). The number of glaucoma medications dispensed in Ontario increased from 1992 to 2004 by 91.5% (10.5% annual increase). There were no significant correlations between the LTP rates and the new glaucoma medications rates ($r=-0.35$ to 0.09; $P=0.34$ to 0.82) or filtration surgeries rates ($r=0.007$; $P=0.98$).</p> <p>CONCLUSIONS: There was a substantial reduction in the number of LTP between 1997 and 2001 coinciding, but not correlated with the introduction of medications for the treatment of glaucoma. Between 2002 and 2004 the LTP rates increased, coinciding with the introduction of SLT.</p>
106	Peer reviewed Article	SLT as primary and adjunctive therapy Clinical Outcomes	Selective laser trabeculoplasty as initial and adjunctive treatment for open-angle glaucoma	McIlraith I, Strasfeld M, Colev G, Hutnik CM.	Ivey Eye Institute, University of Western Ontario, London, Ontario, Canada.	J Glaucoma. 2006 Apr;15(2):124-30.	2006	English	<p>PURPOSE: To investigate the efficacy and safety of selective laser trabeculoplasty as an initial treatment for newly diagnosed open-angle glaucoma, and its role as adjunctive therapy.</p> <p>PATIENTS AND METHODS: A prospective multicenter nonrandomized clinical trial was performed. Patients with newly diagnosed open-angle glaucoma or ocular hypertension were assigned to the primary (selective laser trabeculoplasty) treatment group or the control (latanoprost) group according to patient choice. Both groups were followed up at 1, 3, 6, and 12 months. A secondary treatment group was also included to study the efficacy of selective laser trabeculoplasty for patients intolerant of medical therapy or in whom such therapy was unsuccessful, with or without a history of previous argon laser trabeculoplasty.</p> <p>RESULTS: One hundred eyes (61 patients) were enrolled, 74 in the primary treatment group and 26 in the control group. The average absolute and percent reductions in intraocular pressure for the primary treatment group were 8.3 mm Hg or 31.0%, compared with 7.7 mm Hg or 30.6% for the control group ($P = 0.208$ and $P = 0.879$). The responder rates (20% pressure reduction) were 83% and 84% for the primary and control groups, respectively. There were no differences in intraocular pressure lowering with selective laser trabeculoplasty on the basis of angle pigmentation. A modest contralateral effect was observed in the untreated fellow eyes of patients undergoing selective laser trabeculoplasty.</p> <p>CONCLUSIONS: Selective laser trabeculoplasty was found to be equally efficacious as latanoprost in reducing intraocular pressure in newly diagnosed open-angle glaucoma and ocular hypertension over 12 months, independent of angle pigmentation. Nonsteroidal antiinflammatory therapy had similar efficacy to steroids after laser therapy. These findings support the consideration of selective laser trabeculoplasty as a first-line treatment for newly diagnosed open-angle glaucoma or ocular hypertension.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
107	Peer reviewed Article	Secondary Glaucoma Clinical outcomes	Selective laser trabeculoplasty for intraocular pressure elevation after intravitreal triamcinolone acetonide injection.	Pizzimenti JJ, Nickerson MM, Pizzimenti CE, Kasten-Aker AG.	Nova Southeastern University, College of Optometry, Ft. Lauderdale, Florida, USA.	Optom Vis Sci. 2006 Jul;83(7):421-5.	2006	English	<p>PURPOSE: Intravitreal injection of triamcinolone acetonide has increasingly become a therapeutic option for neovascular, inflammatory, and edematous intraocular diseases. A common side effect of this treatment is a steroid-induced elevation of intraocular pressure. In most of these patients, the rise in intraocular pressure can be treated topically. Those cases that cannot be treated medically have been treated with filtering surgery. This report presents a case of intraocular pressure elevation after intravitreal triamcinolone acetonide injection that was successfully treated with selective laser trabeculoplasty.</p> <p>CASE REPORT: A 63-year-old white man presented with brow ache on the right side approximately 3 months after undergoing intravitreal injection of triamcinolone acetonide for diabetic macular edema in the right eye. Applanation tonometry revealed an intraocular pressure of 45 mm Hg in the involved eye. After initial treatment with topical medications, the patient underwent selective laser trabeculoplasty. Now, 6 months postlaser treatment, the intraocular pressure in the involved eye is stable at 15 mm Hg without topical medications.</p> <p>CONCLUSIONS: A steroid-induced elevation of intraocular pressure is a common and widely reported side effect of treatment with intravitreal triamcinolone acetonide. This case report suggests that selective laser trabeculoplasty has potential as first- or second-line therapy for intraocular pressure elevation after intravitreal triamcinolone acetonide injection.</p>
108	Peer reviewed Article	Predictive factors Clinical Outcomes	Selective laser trabeculoplasty: predictive value of early intraocular pressure measurements for success at 3 months.	Johnson PB, Katz LJ, Rhee DJ.	Massachusetts Eye and Ear Infirmary, 243 Charles Street, Boston, MA, USA.	Br J Ophthalmol. 2006 Jun;90(6):741-3. Epub 2006 Feb 7.	2006	English	<p>AIM: To determine the predictive value of the 2 week post-selective laser trabeculoplasty (SLT) intraocular pressure (IOP) by comparing it to the 4 week and 3 month values.</p> <p>METHODS: A retrospective chart review of eyes that underwent SLT between 2001 and 2004 was performed. The primary outcome measure was IOP. Demographic and medical data were collected for correlational analysis.</p> <p>RESULTS: 132 eyes of 95 patients were identified, none was excluded. Of the eyes that exhibited a decrease in IOP of >1 mm Hg at 2 weeks postoperatively, 99.24% continued to show a lowered IOP at the 4 week and 3 month visits. For these patients, the Pearson's r value between 2 weeks and 4 weeks was 0.708 (p value = 0.01) while the r value between 2 weeks and 3 months was 0.513 (p value = 0.01).</p> <p>CONCLUSIONS: The 2 week visit post-SLT predicted the 4 week and 3 month visits if the 2 week visit demonstrated a decrease in IOP. These findings suggest that those patients who had a decreased IOP at 2 weeks and are at their goal IOP may not need to be screened until 3 months postoperatively.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
109	Peer reviewed Article	Long term follow up Clinical Outcomes	Long-term clinical results of selective laser trabeculoplasty in the treatment of primary open angle glaucoma.	Weinand FS, Althen F.	Department of Ophthalmology, University Eye Clinic, Giessen, Germany.	Eur J Ophthalmol. 2006 Jan-Feb;16(1):100-4	2006	English	<p>PURPOSE: To investigate the long-term efficacy of selective laser trabeculoplasty (SLT) in primary open-angle glaucoma, the authors performed a non-randomized, prospective, non-comparative clinical case series.</p> <p>METHODS: Fifty-two eyes of 52 patients (19 male, 33 female) with primary open angle glaucoma were treated with SLT. Patients were treated with the Coherent Selecta 7000 (Coherent, Palo Alto, CA, USA) frequency-doubled q-switched Nd:YAG laser (532 nm). A total of approximately 50 non-overlapping spots were placed over 180 degrees of the trabecular meshwork at energy levels ranging from 0.6 to 1.4 mJ per pulse. After surgery, patients were maintained with the drug regimen identical to that before treatment.</p> <p>RESULTS: After 1 year the average reduction in intraocular pressure (IOP) from the baseline was 24.3% (6.0 mmHg), after 2 years 27.8% (6.12 mmHg), after 3 years 24.5% (5.53 mmHg), and after 4 years 29.3% (6.33 mmHg). A Kaplan-Meier survival analysis revealed a 1-year success rate of 60%, a 2-year success rate of 53%, a 3-year success rate of 44%, and a 4-year success rate of 44%.</p> <p>CONCLUSIONS: Despite a declining success rate, SLT is an effective method to lower IOP over an extended period of time.</p>
110	Peer reviewed Article	Long term follow up Clinical Outcomes	Long-term follow-up of selective laser trabeculoplasty in primary open-angle glaucoma	Gracner T, Falez M, Gracner B, Pahor D	Augenabteilung des Lehrkrankenhauses Maribor, Slovenia.	Klin Monatsbl Augenheilkd. 2006 Sep;223(9):743-7. Links	2006	German	<p>BACKGROUND: Our aim was to investigate the outcomes of selective laser trabeculoplasty (SLT) for the treatment of primary open-angle glaucoma (POAG) in a prospective clinical study. PATIENTS AND METHODS: In 90 eyes suffering from POAG, treatment was carried out with a frequency-doubled, Q-switched Nd:YAG laser (532 nm). The intraocular pressure (IOP) was measured before the treatment and 1, 3, 6, 12, 18, 24, 30, 36, 42, 48, 54, 60, 66 and 72 months after. A failure was defined as an IOP reduction of less than 20 % of the pretreatment IOP, or a progression of visual field or optic disc damage requiring filtering surgery. The hypotensive medication during the study period remained unchanged.</p> <p>RESULTS: The mean follow-up time was 41.2 months (SD 20.0). The mean pretreatment IOP was 22.4 mmHg (SD 2.3). At one month of follow-up, the mean IOP reduction was 5.0 mmHg (SD 2.3) or 22.3 % and at 6 months 5.2 mmHg (SD 2.4) or 23.2 %. At 12 months of follow-up, the mean IOP reduction was 5.4 mmHg (SD 2.4) or 24.0 % and at 24 months 5.8 mmHg (SD 2.3) or 25.5 %. At 36 months of follow-up, the mean IOP reduction was 5.7 mmHg (SD 2.1) or 25.1 % and at 48 months of follow-up, the mean IOP reduction was 5.2 mmHg (SD 1.9) or 23.1 %. At 60 months of follow-up, the mean IOP reduction was 5.2 mmHg (SD 2.0) or 22.6 % and at the end of 72 months of follow-up, the mean IOP reduction was 5.4 mmHg (SD 2.3) or 22.8 %. The success rate after 12 months determined by Kaplan-Meier survival analysis was 94 %, after 24 months 85 %, after 36 months 74 %, after 48 months 68 % and after 72 months 59 %.</p> <p>CONCLUSION: SLT is an effective procedure offering an additional therapy option for the treatment of POAG, but the effect diminishes over time.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
111	Peer reviewed Article	Health Economics	Laser trabecu- loplasty trends with the introduction of new medical treatments and selective laser trabecu- loplasty	Rachmiel R, Trope GE, Chipman ML, Gouws P, Buys YM.	Department of Ophthal- mology and Visual Sciences, Toronto Western Hospital, To- ronto, Ontario, Canada.	J Glaucoma. 2006 Aug;15(4):306-9	2006	English	<p>PURPOSE: To correlate trends of laser trabeculoplasties (LTPs) with the introduction of medical therapies for glaucoma and to assess whether these trends changed after the introduction of selective laser trabeculoplasty (SLT) in 2001.</p> <p>METHODS: A retrospective analysis of LTP numbers, filtration surgeries, glaucoma medications dispensed, and population distribution by age in Ontario, Canada, between April 1992 and March 2005.</p> <p>RESULTS: The number of LTP per 1,000 persons estimated to have primary open angle glaucoma (POAG) increased from 138.05 in 1992 to a maximum of 149.23 in 1996 (8.1% increase, 1.96% annual increase) and then steadily decreased to 70.65 in 2001 (47.3% decrease, 14% annual decrease). From 2001 to 2004, the LTP rate increased to 162.54 (230% increase, 32% annual increase). The number of filtration surgeries per 1,000 persons estimated to have POAG steadily decreased from 1996 to 2004 by 21.42% (2.4% annual decrease). The number of glaucoma medications dispensed in Ontario increased from 1992 to 2004 by 91.5% (10.5% annual increase). There were no significant correlations between the LTP rates and the new glaucoma medications rates ($r=-0.35$ to 0.09; $P=0.34$ to 0.82) or filtration surgeries rates ($r=0.007$; $P=0.98$). CONCLUSIONS: There was a substantial reduction in the number of LTP between 1997 and 2001 coinciding, but not correlated with the introduction of medications for the treatment of glaucoma. Between 2002 and 2004 the LTP rates increased, coinciding with the introduction of SLT.</p>
112	Peer reviewed Article	Health Economics	Projected cost comparison of selective laser trabecu- loplasty versus glaucoma medication in the Ontario Health Insur- ance Plan.	Lee R, Hutnik CM.	Faculty of Medi- cine and Den- tistry, University of Western On- tario, London, Ont., Canada.	Can J Ophthalmol. 2006 Aug;41(4):449-56.	2006	English	<p>BACKGROUND: The projected 6-year cost comparison of primary selective laser trabeculoplasty (SLT) versus primary medical therapy in the treatment of open-angle glaucoma for Ontario patients aged 65 years or more is presented. Costs are taken from the perspective of the Ontario Health Insurance Plan at a per-patient level.</p> <p>METHODS: The cost of each medication was obtained from the 2003 Ontario Drug Benefits formulary. The average annual cost of medications was determined by estimating the provincial prescription rate of glaucoma medications, with reference to both a volume-per-bottle study of these drugs and a study of pharmacy claims reports. A representative provincial prescription rate was calculated by reviewing 707 patient charts selected randomly from 5 ophthalmologic practices across Ontario. Medication therapies were categorized into mono-, bi-, and tri-drug therapy groups. The cost of SLT was analyzed under the following 2 scenarios. SLT rep 2y assumed a duration of 2 years before repeat SLT was necessary. SLT rep 3y assumed a duration of 3 years before repeat SLT was necessary. Bilateral 180 degrees SLT treatment and repeatability of SLT was assumed. The cost of surgery for patients who fail SLT or medical therapy was not accounted for in this study nor was the cost of patients who required medical therapy in conjunction with SLT.</p> <p>RESULTS: In the SLT rep 2y scenario, the use of primary SLT over mono-, bi-, and tri-drug therapy produced a 6-year cumulative cost savings of 206.54 dollars, 1668.64 dollars, and 2992.67 dollars per patient, respectively. In the SLT rep 3y scenario, the use of primary SLT over mono-, bi-, and tri-drug therapy produced a 6-year cumulative cost savings of 580.52 dollars, 2042.82 dollars, and 3366.65 dollars per patient, respectively.</p> <p>INTERPRETATION: Our findings suggest that SLT as primary therapy, at a per-patient level, offers a modest potential cost saving over primary medical therapy in the management of open-angle glaucoma for Ontario patients aged 65 years or more.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
113	Peer reviewed Article	Complications - case report	Hyphema occurring during selective laser trabeculoplasty.	Shihadeh WA, Ritch R, Liebmann JM.	The New York Eye and Ear Infirmary, New York, NY 10003, USA.	Ophthalmic Surg Lasers Imaging. 2006 Sep-Oct;37(5):432-3.	2006	English	The first case of hyphema occurring during selective laser trabeculoplasty in an eye without neovascularization is described. A 77-year-old man with uncontrolled open-angle glaucoma received selective laser trabeculoplasty in both eyes for high intraocular pressure with maximally tolerated medical treatment. Hyphema occurred during selective laser trabeculoplasty in the left eye. This resolved spontaneously without sequelae. Successful intraocular pressure control was achieved. Hyphema and bleeding can happen during selective laser trabeculoplasty. Although this was transient and uneventful in one patient, careful monitoring of intraocular pressure and anterior chamber reaction is advised.
114	Peer reviewed Article	SLT vs ALT	Argon versus selective laser trabeculoplasty	Van de Veire S, Zeyen T, Stalmans I.	Department of Ophthalmology, UZ St. Rafaël, KU, Leuven.	Bull Soc Belge Ophtalmol. 2006;(299):5-10.		English	<p>PURPOSE: To compare conventional argon laser trabeculoplasty (ALT) with selective laser trabeculoplasty (SLT) in terms of their efficiency in lowering the intra-ocular pressure.</p> <p>METHODS: In this retrospective study, 56 eyes from 44 patients with primary open angle glaucoma, ocular hypertension, pseudo-exfoliative (PXF) or pigment dispersion glaucoma (PDG) were included. Patients underwent either ALT (n=18) or SLT (n=38). The intraocular pressure (IOP) was measured immediately prior to and 3 to 5 weeks after the therapy.</p> <p>RESULTS: At 3 to 5 weeks the IOP-reduction was 22.4% after ALT and 15.5% after SLT (p = 0.141). Of note, of the four patients with PDG 2 underwent ALT and 2 SLT. Remarkably, both patients who had had SLT showed a paradoxical rise in IOP after the procedure (+15.5%). When these patients were excluded from the analysis, a similar hypotensive efficacy was found between ALT (-19%) and SLT (-17.9%) (p = 0.836). A small additional study with lower energy levels (< 0.9 mJ) confirmed the paradoxical IOP rise in 6 patients with heavily pigmented angles (2 with PDG and 2 with PXF) (+19.2%). It occurred in the absence of steroid treatment and persisted until 12 weeks after treatment.</p> <p>CONCLUSIONS: The short term efficacy of ALT and SLT was similar. In this study, the patients with PDG who underwent SLT showed a paradoxical rise in IOP. This finding may indicate that even lower energies (0.4 to 0.6 mJ) are required when performing SLT in patients with heavily pigmented trabeculae.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
115	Peer reviewed Article	SLT vs Medications Clinical Outcomes	A randomised, prospective study comparing selective laser trabeculoplasty with latanoprost for the control of intraocular pressure in ocular hypertension and open angle glaucoma	Nagar M, Ogunyomade A, O'Brart DP, Howes F, Marshall J	Department of Ophthalmology, St Thomas's Hospital, London, UK	Br. J. Ophthalmol. 2005. 89;(11) 1413-1417.	2005	English	<p>AIM: To compare 90 degrees , 180 degrees , and 360 degrees selective laser trabeculoplasty (SLT, 532 nm Nd:YAG laser) with latanoprost 0.005% for the control of intraocular pressure (IOP) in ocular hypertension (OHT) and open angle glaucoma (OAG).</p> <p>METHODS: A prospective, randomised clinical trial in the Department of Ophthalmology, St Thomas's Hospital, London, and Clayton Eye Centre, Wakefield, West Yorkshire. 167 patients (167 eyes) with either OHT or OAG were randomised to receive 90 degrees , 180 degrees , and 360 degrees SLT or latanoprost 0.005% at night and were evaluated at 1 hour, 1 day, 1 week and 1, 3, 6, and 12 months.</p> <p>RESULTS: The mean follow up was 10.3 months (range 1--12 months). Early, transient, complications such as postoperative ocular pain, uveitis, and 1 hour IOP spike occurred in a number of eyes after SLT, with pain being reported more frequently after 360 degrees than 90 degrees treatments ($p > 0.001$). Success rates defined in terms of both a 20% or more and a 30% or more IOP reduction from baseline measurements with no additional antiglaucomatous interventions were better with latanoprost than 90 degrees ($p < 0.001$) and 180 degrees SLT ($p < 0.02$) treatments. Differences in success rates between latanoprost and 360 degrees SLT did not reach statistical significance ($p < 0.5$). Success rates were greater with 180 degrees and 360 degrees compared to 90 degrees SLT ($p < 0.05$). With 360 degrees SLT, 82% of eyes achieved a $> 20\%$ IOP reduction and 59% a $> 30\%$ reduction from baseline. Although success rates were better with 360 degrees than 180 degrees SLT treatments, differences did not reach statistical significance. There were no differences with regard to age, sex, race, pretreatment IOP, OHT versus OAG, laser power settings, and total laser energy delivered between eyes which responded, in terms of a $> 20\%$ and a $> 30\%$ IOP reduction, and those that did not respond with 180 degrees and 360 degrees SLT treatments.</p> <p>CONCLUSIONS: Success rates were higher with latanoprost 0.005% at night than with 90 degrees and 180 degrees SLT treatments. 90 degrees SLT is generally not effective. 360 degrees SLT appears to be an effective treatment with approximately 60% of eyes achieving an IOP reduction of 30% or more. Transient anterior uveitis with associated ocular discomfort is not unusual in the first few days after SLT. Late complications causing ocular morbidity after SLT were not encountered</p>
116	Peer reviewed Article	SLT vs ALT Review	Argon versus selective laser trabeculoplasty in the treatment of open angle glaucoma	Zhao JC, Grosskreutz CL, Pasquale LR	Progressive Vision Insitute, Eye Care Center, Pottsville, PA, USA	Int Ophthalmol Clin. 2005 Fall;45(4):97-106	2005	English	Review of the literature: Efficacy and safety of Selective Laser Trabeculoplasty versus Argon Laser Trabeculoplasty.

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
117	Peer reviewed Article	SLT as an Adjunct or Replacement Therapy Clinical Outcomes	Selective Laser Trabeculoplasty as a replacement for medical therapy in open-angle glaucoma	Francis BA, Ianchulev T, Schofield JK, Minckler DS.	Doheny Eye Institute, Keck School of Medicine, University of Southern California, Los Angeles, CA, USA.	Am J Ophthalmol 2005 Sep ; 140(3) : 524-525	2005	English	<p>PURPOSE: To evaluate selective laser trabeculoplasty (SLT) as a replacement for medical therapy in controlled open-angle glaucoma. DESIGN: Prospective, non-randomized, interventional clinical trial.</p> <p>METHODS: SLT was performed inferiorly in 66 eyes of 66 patients with medically controlled primary open-angle glaucoma (OAG) or exfoliation glaucoma, and no history of glaucoma surgery. The primary outcome was number of medications at 6 and 12 months while maintaining a pre-determined target intraocular pressure (IOP).</p> <p>RESULTS: The mean of the differences in medications from baseline was 2.0 (95% confidence interval = 1.8-2.3) at 6 months, and 1.5 (1.27-1.73) at 12 months ($P < .0001$). The group mean of medications was 2.8 ± 1.1 at baseline, 0.7 ± 0.9 at 6 months, and 1.5 ± 0.9 at 12 months ($P < .0001$). Reduction in medications was attained in 64 of 66 eyes (97%) at 6 months, and 52 of 60 (87%) at 12 months.</p> <p>CONCLUSION: SLT enabled a reduction in medicine in controlled OAG over 12 months.</p>
118	Peer reviewed Article	SLT as an Adjunct or Replacement Therapy Clinical Outcomes	Selective laser trabeculoplasty treatment for medication-refractory open angle glaucoma	Geyer O, Wolf A, Levinger E, Orev T, Segev E.	Department of Ophthalmology, Carmel Medical Center, Haifa, Israel.	Harefuah. 2005 Nov;144(11):790-3, 822, 821.	2005	Hebrew	<p>BACKGROUND: Selective laser trabeculoplasty (SLT) is a new method to reduce intraocular pressure in eyes with primary open angle glaucoma. The laser parameters are set to selectively target pigmented trabecular meshwork (TM) cells without damage to the adjacent non-pigmented tissue.</p> <p>PURPOSE: A clinical retrospective study was conducted to evaluate the 12 months results of SLT in the treatment of medically uncontrolled open angle glaucoma.</p> <p>PATIENTS AND METHODS: During the period March to September 2004, the authors performed a SLT in 50 patients (50 eyes) with open angle glaucoma uncontrolled on maximally tolerated medical therapy. Treatment was carried out with a frequency-doubled, Q-switched Nd:YAG laser 532 nm.(Selectra 7000 Laser Coherent, Inc., Palo Alto, CA). Approximately 85 to 90 non-overlapping laser spots were placed over 180 degrees of the trabecular meshwork at energy levels ranging from 0.6 to 1.4 mJ per pulse. In patients who required additional SLT therapy, the untreated 180 degrees was treated. During the follow-up period, patients were treated with antiglaucoma medications as required. The success rates were defined as decreases in intraocular pressure (IOP) of 3 mmHg or more with no additional medications, laser, or glaucoma surgery.</p> <p>RESULTS: The mean IOP reduction from baseline 6 months after treatment was 21% and 20% after 12 months. The success rates were 66% after 6 months and 55% after 12 months. Four eyes (8%) did not respond to SLT. One hour after SLT, an increase in IOP of more than 5 mm Hg was detected in 5 eyes (10%). Seven patients (14%) required additional SLT.</p> <p>CONCLUSIONS: SLT is efficient in lowering IOP in medication-refractory open angle glaucoma. It should be considered in such patients when surgery is contraindicated or refused.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
119	Peer reviewed Article	Predictive factors	Baseline IOP predicts selective laser trabeculoplasty success at 1 year post-treatment: results from a randomised clinical trial.	Hodge WG, Damji KF, Rock W, Buhrmann R, Bovell AM, Pan Y.	Department of Ophthalmology, The University of Ottawa Eye Institute, Ottawa, Canada.	Br J Ophthalmol. 2005 Sep;89(9):1157-60.	2005	English	<p>BACKGROUND/AIMS: The efficacy and safety of selective laser trabeculoplasty (SLT) has been found to be equivalent to argon laser trabeculoplasty (ALT). Since SLT produces significantly less disturbance to the trabecular meshwork and is theoretically more repeatable than ALT, it has potential to replace ALT as the standard procedure to treat medically uncontrolled open angle glaucoma. This study's objective is to determine factors that predict successful SLT at 1 year post-treatment.</p> <p>METHODS: As part of a randomised clinical trial comparing the efficacy and safety of SLT to ALT, data on 72 SLT patients were collected, and successful SLT defined as having an SLT induced intraocular pressure (IOP) reduction of $\geq 20\%$ at 1 year post-treatment follow up.</p> <p>RESULTS: 43 out of the 72 patients who had completed their 1 year follow up visit had an IOP reduction of $\geq 20\%$ from baseline. No glaucoma risk factors studied predicted successful SLT. The amount of trabecular meshwork pigmentation was not a significant predictor. However, it was discovered that baseline IOP strongly predicted SLT success (odds ratio=1.16; $p=0.0001$).</p> <p>CONCLUSION: SLT success was significantly predicted by baseline IOP but not by age, sex, other glaucoma risk factors, type of open angle glaucoma, or by degree of trabecular meshwork pigmentation.</p>
120	Peer reviewed Article	Long term follow up Clinical Outcomes	Long-term results after selective laser trabeculoplasty -- a clinical study on 269 eyes	Best UP, Domack H, Schmidt V.	Augenlinik und Augenlaserklinik Mainfranken, Germany	Klin Monatsbl Augenheilkd. 2005 Apr;222(4):326-31.	2005	German	<p>BACKGROUND: Selective laser trabeculoplasty SLT is a new method to reduce intraocular pressure in eyes with primary open angle glaucoma. With a Q-switched, frequency-doubled Nd:YAG laser it targets the pigmented trabecular meshwork cells without visible damage to the adjacent non-pigmented tissue. SLT acts non-thermally, the intracellular microdisruptions triggered by the laser are confined to the targeted cells, the laser pulses are so short that heat created within the targeted cells does not have time to spread to the surrounding tissue. A clinical prospective study was conducted to evaluate the long-term results, safety and efficacy of SLT in the treatment of open angle glaucoma.</p> <p>PATIENTS AND METHODS: Since 2002, we have performed a selective laser trabeculoplasty in 269 eyes: in 17 eyes with ocular hypertension, in 239 eyes with primary open angle glaucoma, in 11 eyes with low tension glaucoma, while 2 eyes had a secondary glaucoma due to uveitis. In 22 eyes the primary initial treatment was SLT.</p> <p>RESULTS: Three months after treatment, the mean IOP reduction from baseline was 3.4 mm Hg, respectively 15 %, after 12 months the mean IOP reduction was 3.0 mm Hg (12.9 %), and after 24 months 2.7 mm Hg or 12.1 %. The response curve of the eyes with ocular hypertension greatly resembled the eyes with primary open angle glaucoma and with low tension glaucoma.</p> <p>CONCLUSIONS: SLT has shown reasonable efficacy in lowering IOP in eyes with primary open angle glaucoma and ocular hypertension, both as a first-line treatment and as a treatment in medication-refractory eyes. SLT is effective for patients who have had prior treatment with ALT. Long-term follow-up studies are needed to determine whether the IOP lowering effect is sustained over time, and to assess the efficacy of repeated SLT. The exact biological effect induced with the SLT is still not understood.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
121	Peer reviewed Article	Clinical Outcomes	High failure rate associated with 180 degrees selective laser trabeculoplasty.	Song J, Lee PP, Epstein DL, Stinnett SS, Herndon LW Jr, Asrani SG, Allingham RR, Challa P.	Department of Ophthalmology, Duke University Medical Center, Durham, North Carolina NC, USA.	J Glaucoma. 2005 Oct;14(5):400-8. Links	2005	English	<p>PURPOSE: To determine the efficacy of selective laser trabeculoplasty (SLT) in a tertiary care referral center.</p> <p>PATIENTS AND METHODS: In this retrospective study of selective laser trabeculoplasty performed by five physicians, 94 eyes from 94 patients were included. A majority (83/92, 90%) underwent 180 degrees selective laser trabeculoplasty. Selective laser trabeculoplasty failure was defined in two ways: (1) IOP decrease <3 mm Hg (definition one), or (2) IOP decrease <20% (definition two), on two successive visits > or =4 weeks after SLT.</p> <p>RESULTS: Overall failure rates were 68% (64/94) and 75% (70/94) (by definitions one and two, respectively). By survival/life-table analysis, mean time to failure was 6 months and 5.5 months, by definitions one and two, respectively. By the end of the study (14.5 months), the failure rates were 86% and 92% by definitions one and two, respectively. By each definition, in both univariable and multivariable analysis, only lower baseline IOP was a significant predictor of failure.</p> <p>CONCLUSIONS: Selective laser trabeculoplasty had an overall low success rate in our tertiary clinic population, with overall failure rates of 68% to 74% in those who underwent 180 degrees selective laser trabeculoplasty.</p>
122	Peer reviewed Article	Basic Science	A new insight into the cellular regulation of aqueous: how trabecular meshwork endothelial cells drive a mechanism that regulates the permeability of outflow Schlemm's canal endothelial cells	Alvarado, JA et al.	University of California San Francisco, Department of Ophthalmology; 10 Koret Way; San Francisco, CA, USA.	Br. J. Ophthalmol. 2005;89;1500-1505.	2005	English	<p>AIM: To test the hypothesis that trabecular meshwork endothelial cells (TMEs) increase the permeability of Schlemm's canal endothelial cells (SCEs) by actively releasing ligands that modulate the barrier properties of SCEs.</p> <p>METHODS: The TMEs were first irradiated with a laser light and allowed to condition the medium, which is then added to SCEs. The treatment response is determined by both measuring SCE permeability (flow meters) and the differential expression of genes (Affymetrix chips and quantitative polymerase chain reaction (PCR)). The cytokines secreted by the treated cells were identified using ELISA and the ability of these cytokines to increase permeability is tested directly after their addition to SCEs in perfusion experiments.</p> <p>RESULTS: SCEs exposed to medium conditioned by the light activated TMEs (TME-cm) respond by undergoing a differential expression (DE) of 1,120 genes relative to controls. This response is intense relative to a DE of only 12 genes in lasered SCEs. The TME-cm treatment of SCEs increased the SCE permeability fourfold. The role of cytokines in these responses is supported by two findings: adding specific cytokines established to be secreted by lasered TMEs to SCEs increases permeability; and inactivating the TME-cm by boiling or diluting, abrogates these conditioned media permeability effects.</p> <p>CONCLUSION: These experiments show that TMEs can regulate SCE permeability and that it is likely that TMEs have a major role in the regulation of aqueous outflow. This novel TME driven cellular mechanism has important implications for the pathogenesis of glaucoma and the mechanism of action of laser trabeculoplasty. Ligands identified as regulating SCE permeability have potential use for glaucoma therapy.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
123	Peer reviewed Article	Review	Glaucoma lasers: a review of the newer techniques.	Holz HA, Lim MC.	Department of Ophthalmology, University of California, Davis, Sacramento, California, USA.	Curr Opin Ophthalmol. 2005 Apr;16(2):89-93.	2005	English	<p>PURPOSE OF REVIEW: This paper serves to review the safety and efficacy of new laser techniques for the treatment of glaucoma with emphasis on those studies published within the past year.</p> <p>RECENT FINDINGS: Recently published studies have reinforced the strong safety profile, and efficacy of selective laser trabeculoplasty (SLT). Endoscopic photocoagulation, while more technically challenging and more invasive, offers several advantages over transcleral cyclophotocoagulation including direct observation of treatment and therefore, fewer complications. Laser goniopuncture is a fledgling technology with, thus far, a good safety profile, and benefits that include conjunctival sparing and good treatment response. Many unanswered questions remain including long-term success rates and ideal treatment parameters.</p> <p>SUMMARY: The benefits of laser in the treatment of glaucoma have been well established, and while some techniques will add to the ophthalmologists' armamentarium, others will fall into disuse as the efficacy and safety profiles of these procedures become recognized. Novel laser modalities, as well as the more traditional ones, require continued evaluation to further refine treatment parameters and to determine their long-term benefits.</p>
124	Peer reviewed Article	Review	Selective laser trabeculoplasty.	Latina MA, de Leon JM.	Department of Ophthalmology, Tufts University School of Medicine, Boston, USA.	Ophthalmol Clin North Am. 2005 Sep;18(3):409-19, vi.	2005	English	<p>Selective laser trabeculoplasty (SLT) has been shown to be safe, well tolerated, and effective in intraocular pressure (IOP) reduction as therapy in several forms of open-angle glaucoma. The preservation of trabecular meshwork (TM) architecture and the demonstrated efficacy in lowering IOP make SLT a reasonable and safe alternative to argon laser trabeculoplasty (ALT). SLT may also be effective for cases of failed ALT and is a procedure that may also be repeatable, unlike ALT. SLT is also a simple technique for an ophthalmologist to learn as the large spot size eliminates the need to locate a particular zone of treatment on the TM. SLT has been demonstrated to be effective as primary treatment for open angle glaucoma and can be an effective adjunct in the early treatment of glaucoma. Furthermore, SLT can be considered as a primary treatment option in patients who cannot tolerate or who are noncompliant with their glaucoma medications, without interfering with the success of future surgery.</p>
125	Peer reviewed Article	Complications - case report	Selective laser trabeculoplasty (SLT) complicated by intraocular pressure elevation in eyes with heavily pigmented trabecular meshworks.	Harasymowycz PJ, Papatheakis DG, Latina M, De Leon M, Lesk MR, Damji KF.	Ophthalmology Department, University of Montreal, Maisonneuve-Rosemont Hospital, 5689 Boulevard Rosemont, Montreal, Quebec, Canada.	Am J Ophthalmol. 2005 Jun;139(6):1110-3. Links	2005	English	<p>PURPOSE: To report and assess the complication of intraocular pressure (IOP) elevations after selective laser trabeculoplasty (SLT) in patients with heavily pigmented trabecular meshworks. DESIGN: Noncomparative, observational case series.</p> <p>METHODS: Retrospective analysis of the medical files of four glaucoma patients with heavily pigmented trabecular meshwork, who presented with IOP elevations after SLT.</p> <p>RESULTS: All four glaucoma patients presented with post-SLT IOP elevations. Three had features of pigmentary dispersion syndrome, and the fourth had a heavily pigmented trabecular meshwork. Two patients had previous argon laser trabeculoplasty (ALT) in the same eye in which SLT was performed, and one had a previous ocular trauma. Eventually, three of the patients required surgical trabeculectomy.</p> <p>CONCLUSIONS: This case series suggests that post-SLT IOP elevations can be a serious adverse event in some glaucomatous patients. It is recommended by the authors that patients with a deeply pigmented trabecular meshwork, taking multiple topical medications and having previous ALT treatment, should be considered at higher risk for this complication.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
126	Peer reviewed Article	SLT vs ALT	Selective vs. argon laser trabeculoplasty: Hypotensive efficacy, anterior chamber inflammation, and postoperative pain.	Martinez-de-la-Casa JM, Garcia-Feijoo J, Castillo A, Matilla M, Macias JM, Benitez-del-Castillo JM, Garcia-Sanchez J		Eye 2004; 18: 498-502.	2004	English	IOP lowering effect similar for both treatments Energy released during treatment and inflammation in postoperative period were significantly lower with SLT SLT procedure better tolerated than ALT, producing less discomfort
127	Peer reviewed Article	SLT vs ALT	Selective vs argon laser trabeculoplasty: hypotensive efficacy, anterior chamber inflammation, and postoperative pain.	Martinez-de-la-Casa JM, Garcia-Feijoo J, Castillo A, Matilla M, Macias JM, Benitez-del-Castillo JM, Garcia-Sanchez J.	Instituto de Investigaciones, Oftalmologicas Ramon, Castroviejo Hospital Clinico, San Carlos, Universidad Complutense de Madrid, Madrid, Spain.	Eye. 2004 May;18(5):498-502.	2004	English	<p>PURPOSE: To compare selective laser trabeculoplasty (SLT) with conventional argon laser trabeculoplasty (ALT) in terms of hypotensive efficacy, anterior chamber inflammation, and pain reported by the patients treated.</p> <p>METHODS: A prospective study performed on 40 consecutive patients. Group I (n = 20): SLT 180 degrees. Group II (n = 20): ALT 180 degrees. Intraocular pressure, flare (Laser-Flare-Meter, Kowa FM-500, Japan), and pain (Visual Analogue Scale) were measured before treatment and 1 h, 24 h, 1 week, and 1, 3 and 6 months after treatment. Statistically significant differences were determined by an independent-sample Student's t-test.</p> <p>RESULTS: At 6 months after treatment, pressure reduction was similar in both groups: SLT 22.2% (range 0-36.3%) and ALT 19.5% (range 0-30.2%), P= 0.741. The energy released during treatment was significantly lower in SLT (48.3 SD 7.4 mJ) than in ALT (4321 SD 241.7 mJ), P < 0.001. At 1 h after treatment, anterior chamber flare was also lower in SLT (13.3 SD 6.3 vs 20.7 SD 7.4 photons/ms), P = 0.003. Pain reported by the patients during the treatment was significantly lower in SLT (2.0 SD 0.7 vs 4.3 SD 1.3), P<0.001.</p> <p>CONCLUSIONS: The hypotensive efficacy of both lasers at the end of follow-up was similar. The energy released during treatment and inflammation produced in the anterior chamber in the immediate postoperative period were significantly lower for SLT. The SLT procedure was better tolerated, producing less discomfort during treatment than conventional trabeculoplasty with argon.</p>
128	Peer reviewed Article	SLT vs ALT	Argon versus Selective Laser Trabeculoplasty.	Cioffi GA, Latina MA, Schwartz GF	Devers Eye Institute, Portland, Oregon, USA.	J Glaucoma 2004; 13(2):174-177.	2004	English	Case report: Comparison of practical & theoretical differences between SLT and ALT in the treatment of POAG

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
129	Peer reviewed Article	SLT vs ALT	Comparison of long-term outcomes of selective laser trabeculoplasty versus argon laser trabeculoplasty in open-angle glaucoma.	Juzych MS, Chopra V, Banitt MR, Hughes BA, Kim C, Goulas MT, Shin DH.	Kresge Eye Institute, Wayne State University School of Medicine, Detroit, Michigan	Ophthalmology. 2004 Oct;111(10):1853-9.	2004	English	<p>PURPOSE: To compare the long-term success rate of selective laser trabeculoplasty (SLT) versus argon laser trabeculoplasty (ALT).</p> <p>DESIGN: Retrospective chart review.</p> <p>PARTICIPANTS: One hundred ninety-five eyes of 195 patients with uncontrolled open-angle glaucoma (OAG), of which 154 eyes underwent ALT and 41 eyes underwent SLT and were followed up for a maximum of 5 years.</p> <p>INTERVENTION: The SLT patients were treated with the frequency-doubled q-switched neodymium:yttrium-aluminum-garnet laser (532 nm). Approximately 50 to 55 nonoverlapping spots were placed over 180 degrees of the trabecular meshwork at energy levels ranging from 0.6 to 1.0 mJ per pulse. The ALT patients were treated with the argon blue-green laser with between 45 to 55 adjacent, nonoverlapping spots over 180 degrees of the trabecular meshwork at 470 to 1150 mW of energy per pulse.</p> <p>MAIN OUTCOME MEASURES: The success rates were defined by criterion I and criterion II. Success by criterion I was defined as a decrease in intraocular pressure (IOP) of 3 mmHg or more with no additional medications, laser, or glaucoma surgery. Criterion II had the same requirements as criterion I, except that a 20% or more IOP reduction was required for success.</p> <p>RESULTS: The mean follow-up time was 37.4+/-14.7 months for patients in the SLT group and 33.6+/-17.0 months for patients in the ALT group. The long-term success rate was not significantly different between the ALT and SLT groups by either criterion (Kaplan-Meier survival analysis log-rank P = 0.20 by criterion I and P = 0.12 by criterion II). When comparing patients with and without previous ALT, there was not a statistically significant difference in the patients treated with SLT by either criterion (log-rank P = 0.37 by criterion I and P = 0.39 by criterion II).</p> <p>CONCLUSIONS: In eyes with primary OAG that are receiving maximally tolerated medical therapy, SLT was found to be as effective as ALT in lowering IOP over a 5-year period. However, long-term data reveal that many of the glaucoma patients treated with SLT and ALT required further medical or surgical intervention. Whether SLT has better long-term success than ALT in repeat laser trabeculoplasty treatments remains unclear.</p>
130	Peer reviewed Article	Meth-odology Clinical Outcomes	A comparison between 90 degrees and 180 degrees selective laser trabeculoplasty.	Chen E, Golchin S, Blomdahl S.	Glaucoma Service, St Erik's Eye Hospital, Stockholm, Sweden.	J Glaucoma. 2004 Feb;13(1):62-5.	2004	English	<p>PURPOSE: To compare two regimens of SLT, ie, SLT with 25 laser spots on 90 degrees of trabecular meshwork and SLT with 50 laser spots on 180 degrees of trabecular meshwork in patients with open-angle glaucoma.</p> <p>PATIENTS AND METHODS: In a prospective clinical study, the authors compared pressure-lowering effect of SLT in 2 groups of patients; 1 group (32 patients) received SLT with 25 laser spots on 90 degrees of trabecular meshwork, the other group (32 patients) SLT with 50 laser spots on 180 degrees of trabecular meshwork.</p> <p>RESULT: There was no difference in the pressure reduction between these two treatment regimens. Moreover, the pressure reduction was not influenced by previous ALT treatments. The pigmentation in the trabecular meshwork is related to a delayed effect on the pressure lowering after SLT.</p> <p>CONCLUSION: SLT with 25 laser spots on 90 degrees of trabecular meshwork has a similar pressure-lowering effect to SLT with 50 laser spots on 180 degrees of trabecular meshwork. The new treatment regimen with less laser spots could increase the repeatability of SLT and reduce potential tissue damage in the trabecular meshwork.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
131	Peer reviewed Article	Long term follow up Clinical Outcomes	Five-year follow up of selective laser trabeculoplasty in Chinese eyes.	Lai JS, Chua JK, Tham CC, Lam DS	Department of Ophthalmology, United Christian Hospital, Kwun Tong, Kowloon, Hong Kong, China.	Clin Experiment Ophthalmol. 2004 Aug;32(4):368-72.	2004	English	<p>PURPOSE: To study the effectiveness and safety of selective laser trabeculoplasty (SLT) on primary open-angle glaucoma and ocular hypertension in Chinese eyes.</p> <p>METHODS: This was a prospective randomized controlled clinical study in which 58 eyes of 29 patients with primary open-angle glaucoma or ocular hypertension were included. One eye of each patient was randomized to receive SLT (Group 1) and the fellow eyes received medical treatment (Group 2). Patients were evaluated after laser treatment at 2 h, 1 day, 1 week, 2 weeks, 1 month, 3 months, 6 months, and then yearly.</p> <p>RESULTS: All patients (13 male, 16 female) were Chinese. The mean age was 51.9 +/- 14.7 years. The mean baseline intraocular pressure was 26.8 +/- 5.6 mmHg in group 1 and 26.2 +/- 4.2 mmHg in group 2 (P = 0.62). The failure rate, defined as intraocular pressure >21 mmHg with maximal medications, was 17.2% in group 1 and 27.6% in group 2 at 5-year follow-up (P = 0.53). Eight eyes (27.6%) in group 1 required medications to control the intraocular pressure to below 21 mmHg. There was no statistically significant difference in the intraocular pressure reductions between the two groups at all time intervals (P > 0.05). The mean number of antiglaucoma medications was significantly lower in the SLT than the medical treatment group up to 5 years of follow up (P < 0.001). Transient post-SLT intraocular pressure spike >5 mmHg was observed in three eyes (10.3%).</p> <p>CONCLUSION: With fewer medications, SLT gives similar intraocular pressure reduction to medical therapy alone in Chinese patients with primary open-angle glaucoma or ocular hypertension.</p>
132	Peer reviewed Article	Clinical Outcomes	Selective laser trabeculoplasty	Rozsival P, Kana V, Hovorková M.	Oční klinika Fakultní nemocnice, Hradec Králové.	Cesk Slov Oftalmol. 2004 Jul;60(4):267-74.	2004	Czech	<p>The prospective clinical study of the selective laser trabeculoplasty (SLT) by means the Coherent Selecta 7000 laser (wave length 532 nm) was conducted. Totally 108.7 +/- 18.3 laser non-overlapping spots (mean energy level 1.04 +/- 0.22 mJ) along the whole circle of the trabecular meshwork in the anterior chamber angle were applied. The study included 258 eyes of 146 patients (50 of them were men) with glaucoma. The mean age of the whole group was 55.9 +/- 13.7 years. The group of unsuccessfully treated patients (30 patients, 41 eyes) in whom the intraocular pressure (IOP) elevated from 23.2 +/- 3.7 mm Hg in 4.7% (measured 493 +/- 474 days after the treatment) during the follow up, was removed from the study. In the group with good response to the SLT, 116 patients (217 eyes) were evaluated 650 +/- 405 days after treatment. Before treatment, in this group the IOP was 23.9 +/- 3.0 mm Hg, at the end of the study the IOP was lowered by 4.5 +/- 2.9 mm Hg, in total by 18.6%. IOP decrease was more pronounced in patients with higher level of IOP at the beginning. Immediately after SLT, no significant rising of the IOP level was recorded. Selective laser trabeculoplasty preserves the integrity of the trabecular meshwork of the anterior chamber angle, and is a safe and clinically effective method of treatment of different forms of glaucoma and ocular hypertension.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
133	Peer reviewed Article	Clinical Outcomes	One-year follow-up of selective laser trabeculoplasty in open-angle glaucoma.	Cvenkel B.	Eye Clinic, University Medical Centre Ljubljana, Ljubljana, Slovenia.	Ophthalmologica. 2004 Jan-Feb;218(1):20-5.	2004	English	<p>BACKGROUND: Selective laser trabeculoplasty (SLT) targets the pigmented trabecular meshwork (TM) cells without damage to the adjacent non-pigmented tissue. A study was conducted to evaluate the efficacy and safety of SLT in the treatment of uncontrolled open-angle glaucoma.</p> <p>METHODS: In a prospective non-randomized study 44 eyes of 31 patients with uncontrolled open-angle glaucoma were treated with a frequency-doubled, Q-switched Nd:YAG laser. A total of approximately 50 spots were placed over 180 degrees of the TM at energy levels ranging from 0.7 to 0.9 mJ. Intraocular pressure (IOP) was measured 1, 2, and 24 h, 1 and 2 weeks and 1, 2, 3, 6, 9, and 12 months after treatment.</p> <p>RESULTS: The average pre-operative IOP was 25.6 (SD 2.6) mm Hg (range 22-34). The mean IOP reduction from baseline at 24 h, 3, 6 and 12 months was 7.1 mm Hg (SD 3.5) or 27.6%; 4.2 mm Hg (SD 3.5) or 16.4%; 4.7 mm Hg (SD 4.2) or 18.6%, and 4.4 mm Hg (SD 3.8) or 17.1%, respectively. The percent of eyes with IOP reduction of 3 mm Hg or more at 3, 6 and 12 months was 66, 78 and 62%. A pressure spike of 8 mm Hg or more was detected in 4 eyes (9.1%). Anterior chamber reaction was seen 1 h after SLT and was mild to moderate in 16 eyes (40.4%) and marked in 3 eyes (6.8%).</p> <p>CONCLUSIONS: SLT has shown reasonable efficacy in lowering IOP over 1-year follow-up, but there was a tendency for IOP to increase with a longer follow-up. Long-term follow-up studies with a large sample size are needed to determine whether the IOP lowering effect is sustained over time, and to assess the efficacy of repeated SLT. Copyright 2004 S. Karger AG, Basel</p>
134	Peer reviewed Article	Review Basic Science	Selective laser trabeculoplasty: stimulating the meshwork to mend its ways	Latina MA, Gulati V.	Massachusetts Ear and Eye Infirmary, Boston 02114, USA.	Int Ophthalmol Clin. 2004 Winter; 44(1):93-103	2004	English	Review - SLT mechanism of action

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
135	Peer reviewed Article	Primary Treatment Clinical Outcomes	Selective Laser Trabeculoplasty as Primary Treatment for Open-angle Glaucoma:	Melamed S, Ben Simon GJ, Levkovitch-Verbin H	The Sam Rothberg Glaucoma Center, Goldschleger Eye Institute, Sheba Medical Center, Tel Hashomer, Israel.	Arch Ophthalmol. 2003 July; 121: 957-960.	2003	English	<p>OBJECTIVE: To examine the safety and efficacy of selective laser trabeculoplasty as primary treatment for patients with open-angle glaucoma.</p> <p>METHODS: Forty-five eyes of 31 patients with open-angle glaucoma or ocular hypertension (intraocular pressure [IOP] ≥ 23 mm Hg on 2 consecutive measurements) underwent selective laser trabeculoplasty as primary treatment. All patients underwent complete ophthalmic evaluation before and at intervals after treatment. This evaluation included visual acuity, slitlamp examination, ophthalmoscopy, gonioscopy, and visual field analysis. The IOP was measured 1 hour, 1 day, 1 week, and 1, 3, 6, 12, 15, and 18 months postoperatively. During the follow-up period, patients were treated with topical antiglaucoma medications as required.</p> <p>RESULTS: Mean \pm SD decreased by 7.7 ± 3.5 mm Hg (30%), from 25.5 ± 2.5 mm Hg to 17.9 ± 2.8 mm Hg ($P < .001$). Only 2 eyes (4%) did not respond to selective laser trabeculoplasty, and 3 eyes (7%) required topical medications to control their IOP at the end of the follow-up period. Forty eyes (89%) had a decrease of 5 mm Hg or more. Visual acuity, visual fields, and gonioscopic findings remained unchanged. Complications included conjunctival redness and injection within 1 day postoperatively in 30 eyes (67%). One hour after selective laser trabeculoplasty, an increase in IOP of more than 5 mm Hg was detected in 5 eyes (11%), while an increase in IOP between 2 and 5 mm Hg was measured in 3 eyes (7%).</p> <p>CONCLUSION: Selective laser trabeculoplasty is effective and safe as a primary treatment for patients with ocular hypertension and open-angle glaucoma.</p>
136	Peer reviewed Article	Long term Follow up Clinical Outcomes	Efficacy of selective laser trabeculoplasty in the treatment of primary open-angle glaucoma	Gracner T, Pahor D, Gracner B.	Augenabteilung des Lehrkrankenhauses Maribor, Slovenia.	Klin Monatsbl Augenheilkd. 2003 Dec;220(12):848-52.	2003	German	<p>BACKGROUND: Our aim was to investigate the efficacy of selective laser trabeculoplasty (SLT) for the treatment of primary open-angle glaucoma (POAG) in a prospective clinical study.</p> <p>PATIENTS AND METHODS: In 36 eyes of 36 patients suffering from uncontrolled POAG, treatment was carried out with a frequency-doubled, Q-switched Nd:YAG laser (532 nm). The intraocular pressure (IOP) was measured before the treatment and one day, one week, one month and 3, 6, 12, 18, 24, 30, 36, 42 and 48 months after. A failure was defined as an IOP reduction of less than 20% from pretreatment IOP, or a progression of visual field or optic disc damage requiring filtering surgery. The hypotensive medication during the study period remained unchanged.</p> <p>RESULTS: The mean follow-up time was 34 months (SD 12.9). The mean pretreatment IOP was 22.9 mm Hg (SD 2.1). At one month of follow-up, the mean IOP reduction was 5.3 mm Hg (SD 2.1) or 23.1% and at 6 months 5.6 mm Hg (SD 2.6) or 24.5%. At 12 months of follow-up, the mean IOP reduction was 5.6 mm Hg (SD 2.3) or 24.5% and at 24 months 6.2 mm Hg (SD 2.5) or 27%. At 36 months of follow-up, the mean IOP reduction was 6.4 mm Hg (SD 2.1) or 27.4% and at the end of 48 months of follow-up, the mean IOP reduction was 5.9 mm Hg (SD 2.0) or 25.4%. The success rate after 12 months determined from the Kaplan-Meier survival analysis was 97%, after 24 months 88%, after 36 months 76% and after 48 months 71%.</p> <p>CONCLUSION: SLT is an effective procedure for the treatment of POAG.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
137	Peer reviewed Article	Basic Science	Acute ultra-structural changes of the trabecular meshwork after selective laser trabeculoplasty and low power argon laser trabeculoplasty.	Cvenkel B, Hvala A, Drnovsek-Olup B, Gale N.	Eye Clinic, University Medical Centre Ljubljana, Ljubljana, Slovenia.	Lasers Surg Med. 2003;33(3):204-8. Links	2003	English	<p>BACKGROUND AND OBJECTIVES: To compare the histopathological changes in the human trabecular meshwork after low power argon laser trabeculoplasty (ALT) and selective laser trabeculoplasty (SLT) with a Q-switched, frequency-doubled, neodymium:yttrium-aluminium-garnet (Nd:YAG) laser.</p> <p>STUDY DESIGN/MATERIALS AND METHODS: In gonioscopically normal trabecular meshwork of three patients awaiting enucleation due to malignant melanoma of the choroid, SLT and ALT were performed 1-5 days prior to enucleation. In each eye, the lower half of trabecular meshwork received SLT, one quadrant low power (460 mW) ALT and one quadrant was left untreated. Specimens were evaluated with light and transmission electron microscopy.</p> <p>RESULTS: A sharp demarcation line was visible between the laser treated and untreated intact trabecular meshwork after ALT and SLT. Both lasers caused disruption of trabecular beams, but the extent of the damage was smaller after SLT. The collagen component of trabecular beams was mostly amorphous, the long-spacing collagen was scanty after ALT, but more abundant after SLT. In the intertrabecular spaces fragmented cells and tissue debris with only a few pigmented cells were observed. Some endothelial cells were desquamated, but appeared slightly better preserved after SLT than ALT.</p> <p>CONCLUSIONS: Our ultrastructural comparison of the morphological changes after low power ALT and SLT in patients demonstrated that both lasers caused splitting and fragmentation of the trabecular beams of the trabecular meshwork, but the extent of the damage was smaller and the preservation of long-spacing collagen better after SLT than after ALT.</p>
138	Peer reviewed Article	Review	Selective Laser Trabeculoplasty for Glaucoma Therapy.	Katz LJ.	Wills Eye Hospital/Thomas Jefferson Medical School, Philadelphia, PA, USA	Review of Ophthalmol. 2003, June;(10) 67-73.	2003	English	<p>Selective Laser Trabeculoplasty is a new technology being introduced into the clinical practice of ophthalmology. Selective laser trabeculoplasty has several potential advantages over argon laser trabeculoplasty. Initial studies suggest a similar efficacy with initial treatment as seen with argon laser trabeculoplasty. SLT intraocular pressure reduction is comparable to what glaucoma medications provide either as adjunctive or primary therapy. Prospective studies are under way to clinically evaluate the role of SLT in the management of open angle glaucoma. Ophthalmologists need to understand the fundamentals of this technology in order to better understand its applications in clinical practice</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
139	Peer reviewed Article	Clinical Outcomes	Intraocular pressure response of capsular glaucoma and primary open-angle glaucoma to selective Nd:YAG laser trabeculoplasty: a prospective, comparative clinical trial.	Gracner T.	Department of Ophthalmology, Maribor Teaching Hospital, Slovenia.	Eur J Ophthalmol. 2002 Jul-Aug;12(4):287-92. Links	2002	English	<p>PURPOSE: To compare the intraocular pressure (IOP) response of uncontrolled capsular glaucoma (CG) and primary open-angle glaucoma (POAG) to selective laser trabeculoplasty (SLT) in a prospective clinical trial.</p> <p>METHODS: Ten eyes of ten patients suffering from uncontrolled CG (CG Group) and ten eyes of ten patients with uncontrolled POAG (POAG Group) were treated with a frequency-doubled, Q-switched Nd:YAG laser (532 nm). The baseline characteristics were similar in both groups. IOP was measured before and 1 day, 1 week, 1 month and 3, 6, 9, 12, 15 and 18 months after treatment. Success was defined as IOP more than 20% lower than before treatment. Any change of hypotensive medication led to the subjects' exclusion from the study. The two groups were compared using the independent-sample t test for continuous variables and the log-rank test for survival analysis. A value of $p < 0.05$ was considered significant.</p> <p>RESULTS: The mean follow-up was 12.0 months (SD 5.5) for the CG group and 13.5 months (SD 4.3) for POAG (n.s.). No significant difference was found between the two groups for mean pretreatment IOP (23.6 mmHg \pm 5.70 in the CG group and 22.8 mmHg \pm 2.44 in the POAG group) or for mean IOP and mean IOP reductions during the follow-up. At all follow-up visits, IOP was reduced less in the CG group than in the POAG group (24.8% \pm 11.15 vs. 27.7% \pm 9.91 at 6 months, 22.0% \pm 6.66 vs. 30.6% \pm 6.35 at 12 months, and 31.4% \pm 5.55 vs. 35.1% \pm 1.75 at 18 months), but the difference was significant only at 12 months. Kaplan-Meier survival analysis gave an 18-month success rate of 64% in the CG group and 78% in the POAG group, with no significant differences between the groups.</p> <p>CONCLUSIONS: SLT is an effective procedure for lowering IOP in CG and POAG eyes, although the effect seems to last less in CG eyes.</p>
140	Peer reviewed Article	Review	Selective laser trabeculoplasty: a new treatment option for open angle glaucoma.	Latina MA, Tumbocon JA.	Glaucoma Fellow, Massachusetts Eye and Ear Infirmary, Boston, Massachusetts, USA.	Curr Opin Ophthalmol. 2002 Apr;13(2):94-6.	2002	English	<p>Selective laser trabeculoplasty (SLT) is a safe and effective treatment modality for lowering the intraocular pressure in patients with open angle glaucoma. The preservation of the trabecular meshwork architecture and the demonstrated efficacy in lowering intraocular pressure makes the SLT a reasonable and safe alternative to argon laser trabeculoplasty. In addition, SLT is a potentially repeatable procedure because of the lack of coagulation damage to the trabecular meshwork and the demonstrated efficacy in patients with previously failed argon laser trabeculoplasty treatment. Furthermore, SLT can be considered as a primary treatment option in patients who cannot tolerate or are noncompliant with their glaucoma medications, while not interfering with the success of future surgery. Due to its nondestructive properties and low complication rate, SLT has the potential to evolve as an ideal first-line treatment in open angle glaucoma.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
141	Peer reviewed Article	Clinical Outcomes	Intraocular pressure reduction after selective laser trabeculoplasty in primary open angle glaucoma.	Gracner T.	General Hospital Maribor, Department of Ophthalmology, Maribor, Slovenia.	Coll Antropol. 2001;25 Suppl:111-5.	2001	English	The aim of this prospective clinical study was to investigate the intraocular pressure (IOP) reduction after selective laser trabeculoplasty (SLT) in patients with primary open-angle glaucoma (POAG). SLT represents a new method in the treatment of POAG. Fifty eyes with uncontrolled POAG were treated with a frequency doubled, Q-switched Nd:YAG laser (532 nm). The pattern of treatment was applying approximately 50 burns to 180 degrees of the trabecular meshwork at energy levels ranging from 0.40-0.92 mJ per pulse. After SLT eyes were maintained with the identical hypotensive medical therapy as that before treatment. IOP was measured before treatment, 1 and 7 days after treatment and 1, 3, 6 and 12 months after treatment. The mean pretreatment IOP was 22.48 (SD 1.84) mm Hg. At the end of 1 month follow-up period the mean reduction of IOP was 4.86 (SD 2.38) mmHg or 21.6%; after 3 months the mean reduction was 5.66 (SD 2.40) mmHg or 25.2%; after 6 months the mean reduction of IOP was 5.06 (SD 2.37) mmHg or 22.5%; at the end of 12 months follow-up period the mean reduction was 4.92 (SD 2.58) mmHg or 21.9%. It can be concluded that SLT presents a new and effective method of IOP reduction in the treatment of POAG.
142	Peer reviewed Article	Clinical Outcomes	Intraocular pressure response to selective laser trabeculoplasty in the treatment of primary open-angle glaucoma.	Gracner T.	Department of Ophthalmology, General Hospital Maribor, Slovenia.	Ophthalmologica. 2001 Jul-Aug;215(4):267-70.	2001	English	PURPOSE: To evaluate the intraocular pressure (IOP) response to selective laser trabeculoplasty (SLT) in the treatment of uncontrolled primary open-angle glaucoma (POAG) in a prospective clinical study. SLT is a new laser procedure that selectively targets trabecular meshwork (TM) cells without coagulative damage to the TM. METHODS: 50 eyes with uncontrolled POAG were treated with a frequency-doubled, Q-switched Nd:YAG laser (532 nm). A total of approximately 50 nonoverlapping spots were placed over 180 degrees of the TM at energy levels ranging from 0.40 to 0.92 mJ/pulse. After SLT, the eyes were maintained with the identical hypotensive medical therapy as that before treatment. IOP was estimated before and 1 day, 7 days, 1 month, 3 months and 6 months after treatment. RESULTS: The mean pretreatment IOP was 22.48 mm Hg (SD 1.84). At the end of 1 month of follow-up IOP was reduced with a mean of 4.86 mm Hg (SD 2.38) or 21.6%; after 3 months, IOP was reduced with a mean of 5.66 mm Hg (SD 2.40) or 25.2%; at the end of 6 months of follow-up, IOP was reduced with a mean of 5.06 mm Hg (SD 2.37) or 22.5%. CONCLUSIONS: SLT is an effective method for lowering IOP in the treatment of POAG. Copyright 2001 S. Karger AG, Basel.

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
143	Peer reviewed Article	Basic Science	Increase of free oxygen radicals in aqueous humour induced by selective Nd:YAG laser trabeculoplasty in the rabbit.	Guzey M, Vural H, Satici A, Karadede S, Dogan Z.	Department of Ophthalmology, Faculty of Agriculture, Harran University, Sanliurfa, Turkey.	Eur J Ophthalmol. 2001 Jan-Mar;11(1):47-52.	2001	English	<p>PURPOSE: To investigate the impact of selective Nd:YAG laser trabeculoplasty on free oxygen radicals and antioxidant enzymes of the aqueous humour in the rabbit.</p> <p>METHODS: One eye of 18 rabbits was subjected to 360 degrees selective laser trabeculoplasty (LT) with a frequency-doubled Nd:YAG laser (532 nm). The anterior chamber aqueous humour was aspirated 3, 12 hours and 1, 3, 7, 10 days after treatment. Lipid peroxide (LPO) and glutathione S transferase (GST) levels and superoxide dismutase (SOD) activities of aqueous humour were measured.</p> <p>RESULTS: Concentrations of LPO in the aqueous humour of the treated eyes were significantly higher than the untreated eyes until the 7th day. Aqueous SOD activity significantly decreased 3 hours after LT and remained low until day 7. Aqueous GST levels were significantly decreased between 12 hours and 7 days after the LT.</p> <p>CONCLUSIONS: Selective LT was followed by an immediate increase in the aqueous humour LPO concentration and decreases of SOD and GST in the rabbit, probably due to photovaporization and photodisruption caused by the frequency-doubled Nd:YAG laser. The increased aqueous LPO levels suggest that free oxygen radicals are formed in the pigmented trabecular meshwork during LT, and may be responsible for the inflammatory complications of this procedure.</p>
144	Peer reviewed Article	Basic Science	Comparison of the morphologic changes after selective laser trabeculoplasty and argon laser trabeculoplasty in human eye bank eyes.	Kramer TR, Noecker RJ.	Emory Eye Center, Emory University School of Medicine, 1365-B Clifton Road N.E., Atlanta, GA, USA.	Ophthalmology. 2001 Apr;108(4):773-9.	2001	English	<p>OBJECTIVE: To compare the histopathologic changes in the human trabecular meshwork (TM) after argon laser trabeculoplasty (ALT) and selective laser trabeculoplasty (SLT) with a Q-switched, frequency-doubled, neodymium:yttrium-aluminum-garnet laser. DESIGN: Human "in vitro" experimental study. TISSUE AND CONTROLS: Eight human autopsy eyes were obtained within 18 hours of death from persons aged 71 to 78 years.</p> <p>METHODS: The anterior segment of autopsy eyes was isolated, and one half of each trabecular meshwork underwent SLT and the other half ALT. Specimens were evaluated with scanning and transmission electron microscopy. MAIN OUTCOME MEASURES: Structural changes in the TM were detected by scanning electron microscopy, and cellular or intracellular changes were seen with transmission electron microscopy.</p> <p>RESULTS: Evaluation of the TM after ALT revealed crater formation in the uveal meshwork at the junction of the pigmented and nonpigmented TM. Coagulative damage was evident at the base and along the edge of craters, with disruption of the collagen beams, fibrinous exudate, lysis of endothelial cells, and nuclear and cytoplasmic debris. Evaluation of the TM after SLT revealed no evidence of coagulative damage or disruption of the corneoscleral or uveal trabecular beam structure. Minimal evidence of mechanical damage was present after SLT, and the only ultrastructural evidence of laser tissue interaction was cracking of intracytoplasmic pigment granules and disruption of trabecular endothelial cells.</p> <p>CONCLUSIONS: SLT applied "in vitro" to the TM of human eye bank eyes seemed to cause no coagulative damage and less structural damage to the human TM when compared with ALT and, therefore, may be a safer and more repeatable procedure.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
145	Peer reviewed Article	Clinical Outcomes	Clinical results of selective laser trabeculoplasty	Kajiya S, Hayakawa K, Sawaguchi S.	Department of Ophthalmology, University of Ryukyu Faculty of Medicine, Okinawa, Japan.	Jpn J Ophthalmol. 2000 Sep 1;44(5):574-575	2000	English	<p>PURPOSE: Selective laser trabeculoplasty (SLT) is a new technique aimed to developed to impact pigmented trabecular cells selectively. Compared with ordinary argon laser trabeculoplasty, it is expected to have fewer complications with more efficacy for open-angle glaucoma. In this study we performed SLT on 17 eyes of 10 patients with primary open-angle glaucoma and 1 eye with capsular glaucoma.</p> <p>METHODS: Follow-up period was up to 10 months. Average energy irrachieted was 28.14 mJ (0.47 mJ x 59 spots) against pigmented trabecular band over the half circumference of anterior chamber angle.</p> <p>RESULTS: Preoperative mean intraocular pressure (IOP) was 22.8 mmHg and postoperative mean IOP was decreased significantly to 8.6, 17.3, and 16.1 mmHg at 1, 3, and 6 months after treatment, respectively. The average maximum IOP reduction was 8.8 (3-18) mmHg after SLT. Among 11 eyes showing transient IOP elevation, 6 eyes had an elevation of more than 5 mmHg. No remarkable postoperative complications were noted.</p> <p>CONCLUSION: SLT is a safe and effective modality for the treatment of open-angle glaucoma such as primary open-angle glaucoma (POAG) and capsular glaucoma.</p>
146	Peer reviewed Article	SLT vs ALT	Selective laser trabeculoplasty v argon laser trabeculoplasty: a prospective randomised clinical trial.	Damji KF, Shah KC, Rock WJ, Bains HS, Hodge WG.	University Of Ottawa Eye Institute, Ottawa Hospital, Ottawa, Ontario, Canada.	Br J Ophthalmol. 1999 Jun;83(6):718-22.	1999	English	<p>AIMS: To compare the effectiveness of selective laser trabeculoplasty (SLT, a 532 nm Nd:YAG laser) with argon laser trabeculoplasty (ALT) in lowering the intraocular pressure (IOP) in patients with medically uncontrolled open angle glaucoma.</p> <p>METHODS: A prospective randomised clinical trial was designed. Patients were randomised to treatment with either SLT or ALT and were evaluated at 1 hour, 1 week, 1, 3, and 6 months post-laser.</p> <p>RESULTS: There were 18 eyes in each group. Baseline characteristics were similar in both groups. In the SLT group the mean IOP at baseline, 1, 3, and 6 months was 22.8 (SD 3.0), 20.1 (4.6), 19.3 (6.0), and 17.8 (4.8) mm Hg, respectively. In the ALT group, the mean IOP at baseline, 1, 3, and 6 months was 22.5 (3.6), 19.5 (4.7), 19.6 (5.6), and 17.7 (3.3) mm Hg, respectively. There was a greater anterior chamber reaction, 1 hour after SLT v ALT ($p < 0.01$). Patients with previous failed ALT had a better reduction in IOP with SLT than with repeat ALT (6.8 (2. 4) v 3.6 (1.8) mm Hg; $p = 0.01$).</p> <p>CONCLUSION: SLT appears to be equivalent to ALT in lowering IOP during the first 6 months after treatment. There is a slightly greater anterior chamber reaction 1 hour after SLT. Patients with previous failed ALT had a significantly greater drop in IOP when treated with SLT v ALT. These results need to be confirmed with a larger sample size.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
147	Peer reviewed Article	Clinical Outcomes	Immediate intraocular pressure response to selective laser trabeculoplasty.	Lanzetta P, Menchini U, Virgili G.	Department of Ophthalmology, University of Udine, Italy.	Br J Ophthalmol. 1999 Jan;83(1):29-32.	1999	English	<p>BACKGROUND/AIMS: Selective laser trabeculoplasty targets the pigmented trabecular meshwork cells without damage to the trabecular meshwork architecture in vitro. A study was conducted in vivo of eight eyes with uncontrolled open angle glaucoma to ascertain the immediate intraocular response to selective laser trabeculoplasty.</p> <p>METHODS: The trabecular meshwork of each eye was treated 360 degrees with a frequency doubled Q-switched Nd:YAG laser. Intraocular pressure was measured 1, 2, 24 hours and 1, 4, 6 weeks after treatment.</p> <p>RESULTS: The average preoperative intraocular pressure was 26.6 (SD 7) mm Hg (range 18-37). Two hours and 6 weeks respectively after selective trabeculoplasty intraocular pressure was reduced in all the eyes treated with an average fall of 10.6 (5.2) mm Hg or 39.9%. A pressure spike of 10 mm Hg verified in one eye 1 hour after treatment.</p> <p>CONCLUSIONS: Selective laser trabeculoplasty decreased intraocular pressure by an amount similar to that achieved with standard trabeculoplasty. Additional study is needed to determine whether the beneficial effect is sustained over a longer period of follow up.</p>
148	Peer reviewed Article	Clinical Outcomes	Clinical results of selective laser trabeculoplasty	Kano K, Kuwayama Y, Mizoue S, Ito N.	Department of Ophthalmology, Osaka Koseinenkin Hospital, Japan.	Nippon Ganka Gakkai Zasshi. 1999 Aug;103(8):612-6.	1999	Japanese	<p>PURPOSE: Selective laser trabeculoplasty (SLT) is a new laser procedure using a frequency-doubled Q-switched Nd: YAG laser (wavelength: 532 nm). The laser parameters are set to selectively target pigmented trabecular meshwork (TM) cells without coagulative damage to the TM structure or non-pigmented cells. We investigated the safety and efficacy of SLT in lowering intraocular pressure (IOP).</p> <p>SUBJECTS AND METHOD: Sixty-seven eyes of 67 patients with uncontrolled open angle glaucoma were treated with the Coherent Selecta 7000 (Coherent Inc., Palo Alto, CA). Nineteen of 67 patients had previously received argon laser trabeculoplasty (ALT). A total of approximately 60 non-overlapping spots were placed over 180 degrees of the TM ranging from 0.5 to 1.0 mJ per pulse. The maximum energy level at which no bubble formation was observed determined choice.</p> <p>RESULTS: The average preoperative IOP was 22.4 mmHg. Six months after the operation, mean IOP reduction was 4.4 mmHg, and mean outflow pressure (OP) reduction was 38.1%. One month after the operation 68.7% of patients responded to treatment with an OP reduction of at least 20% ("responders"). Transient IOP elevation of 5 mmHg or greater was seen in 25.4% of patients. The success rate at 6 months after operation was 64.6% for all patients (67 eyes) and 78.2% for the responders (46 eyes). An analysis using a Cox proportional hazard model showed that a low preoperative IOP was the significant determinant for success, and the hazard ratio for the IOP increase of 5 mmHg was 2.12. Other factors such as age, gender, past history of ALT, and goniotomy were not significantly related to success.</p> <p>CONCLUSION: SLT appears to be a safe and effective way to lower IOP.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
149	Peer reviewed Article	Clinical Outcomes	Q-switched 532-nm Nd:YAG laser trabeculoplasty (selective laser trabeculoplasty): a multicenter, pilot, clinical study.	Latina MA, Sibayan SA, Shin DH, Noecker RJ, Marcellino G.	Wellman Laboratories of Photomedicine, Massachusetts General Hospital, Harvard Medical School, Boston, USA.	Ophthalmology. 1998 Nov;105(11):2082-8; discussion 2089-90.	1998	English	<p>OBJECTIVE: To investigate the safety and efficacy of a new laser procedure using a q-switched 532-nm neodymium (Nd):YAG laser, also called “selective laser trabeculoplasty,” to lower intraocular pressure (IOP) in patients with open-angle glaucoma (OAG). The laser parameters were set to selectively target pigmented trabecular meshwork (TM) cells without coagulative damage to the TM structure or nonpigmented cells.</p> <p>DESIGN: Nonrandomized, prospective, clinical trial.</p> <p>PARTICIPANTS: Thirty eyes of 30 patients with uncontrolled OAG (OAG group) and 23 eyes of 23 patients with uncontrolled OAG treated previously with argon laser trabeculoplasty (ALT group) were observed for 4 to 26 weeks. Forty-four of the 53 eyes were observed for 26 weeks.</p> <p>INTERVENTION: Patients were treated with the Coherent Selecta 7000 (Coherent, Inc, Palo Alto, CA) frequency-doubled q-switched Nd:YAG laser (532 nm). A total of approximately 50 nonoverlapping spots were placed over 180 degrees of the TM at energy levels ranging from 0.6 to 1.2 mJ per pulse. After surgery, patients were maintained with the identical drug regimen as that before treatment.</p> <p>RESULTS: Both the OAG and ALT groups showed similar IOP reductions over time. Seventy percent of patients in each group responded to treatment with an IOP reduction of least 3 mmHg. At 26 weeks of follow-up, mean IOP reduction was 5.8 mmHg (23.5%, $P < 0.001$) for the OAG group and 6.0 mmHg (24.2%, $P < 0.001$) for the ALT group. The untreated eye showed a 9.7% ($P < 0.001$) reduction of IOP at 26 weeks. However, the IOP difference between the treated and untreated eyes was statistically significant at $P < 0.003$. Transient IOP elevation of 5 mmHg or greater was seen in 24% of patients.</p> <p>CONCLUSION: The selective laser trabeculoplasty appears to be a safe and effective method to lower IOP in patients with OAG and patients treated previously with ALT. A reduction of IOP can be achieved without coagulation of the TM.</p>

STUDY	TYPE	TOPIC	TITLE	AUTHORS	RESEARCH SITES	PUBLICATION	YEAR	LANG.	ABSTRACT
150	Peer reviewed Article	Basic Science	Selective targeting of trabecular meshwork cells: in vitro studies of pulsed and CW laser interactions.	Latina MA, Park C.	Wellman Laboratories, Massachusetts General Hospital, Boston, USA.	Exp Eye Res. 1995 Apr;60(4):359-71.	1995	English	<p>The purpose of the present study was to selectively target pigmented trabecular meshwork cells without producing collateral damage to adjacent non-pigmented cells or structures. The ability to selectively target trabecular meshwork cells without coagulation, while preserving the structural integrity of the meshwork, could be a useful approach to study whether the biological response of non-coagulative damage to the trabecular meshwork and trabecular meshwork cells is similar to that seen with coagulative damage to the trabecular meshwork which occurs with argon laser trabeculoplasty. This approach also may be useful to non-invasively deplete trabecular meshwork cells while preserving the structural integrity of the trabecular meshwork in an animal model. A mixed cell culture of pigmented and non-pigmented trabecular meshwork cells were irradiated with Q-switched Nd-YAG and frequency-doubled Nd-YAG lasers, microsound pulsed dye-lasers, and an argon ion laser in order to define a regime where laser absorption would be confined to pigmented trabecular meshwork cells, thereby permitting selective targeting of these cells without producing collateral thermal damage to adjacent non-pigmented cells. Pulse durations ranged from 10 nsec to 0.1 sec. A fluorescent viability/cytotoxicity assay was used to evaluate laser effects and threshold energies, and cells were examined morphologically by light and TEM. Selective targeting of pigmented trabecular meshwork cells was achieved with pulse durations between 10 nsec and 1 microsec and 1 microsec without producing collateral thermal or structural damage to adjacent non-pigmented trabecular meshworks cells when examined by light and transmission electron microscopy. Pulse durations greater than 1 microsec resulted in non-selective killing of non-pigmented trabecular meshwork cells. Threshold radiant exposures were as low as 18 mJ cm⁻², and increased at longer wavelengths, longer pulse durations and lower melanin contents within the cells. It is concluded that selective targeting of pigmented trabecular meshwork cells can be achieved using pulsed lasers with low threshold radiant exposures avoiding collateral thermal damage to adjacent non-pigmented trabecular meshwork cells. This approach can be readily applied in vivo.</p>

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