



Effect of Pupillary Dilation on Intraocular Pressure After Selective Laser Trabeculoplasty as Primary and Secondary Therapy in Patients with Glaucoma

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Introduction

- **Selective Laser Trabeculoplasty (SLT) uses a Q-Switched frequency-doubled (532 nm), low energy Nd:YAG laser, which targets melanocytes in the trabecular meshwork^{1,2}.**
- **SLT treatment induces a biologic response in the trabecular meshwork, which involves the release of cytokines that trigger macrophage recruitment and other changes, leading to reduction in intraocular pressure (IOP).**
- **SLT treats the trabecular meshwork without causing thermal nor coagulative damage to surrounding structures.**

1. Latina MA, et al. Selective targeting of trabecular meshwork cells: in vitro studies of pulsed and CW laser interactions. *Exp Eye Res.* 1995;60:359-372.

2. Latina MA, et al. Q-switched 532-nm Nd:YAG laser trabeculoplasty (selective laser trabeculoplasty): a multicenter, pilot, clinical study. *Ophthalmology.* 1998;105:2082-2090.



Purpose and Methods

➤ Purpose

- To evaluate the effect of pupillary dilation on IOP, after treatment with SLT as primary or secondary therapy, in patients with glaucoma.

➤ Methods

- Retrospective chart review was performed on 102 eyes and 76 eyes, respectively, of those treated as primary or secondary therapy, from a consecutive case series of 3034 eyes treated with SLT over 7.5 years.
- Mean post-treatment IOP was evaluated in two ways, with the pupil dilated and undilated, using the average of each of the three most recent values of IOP.
- Two-tailed paired t-tests were used to evaluate statistical significance.



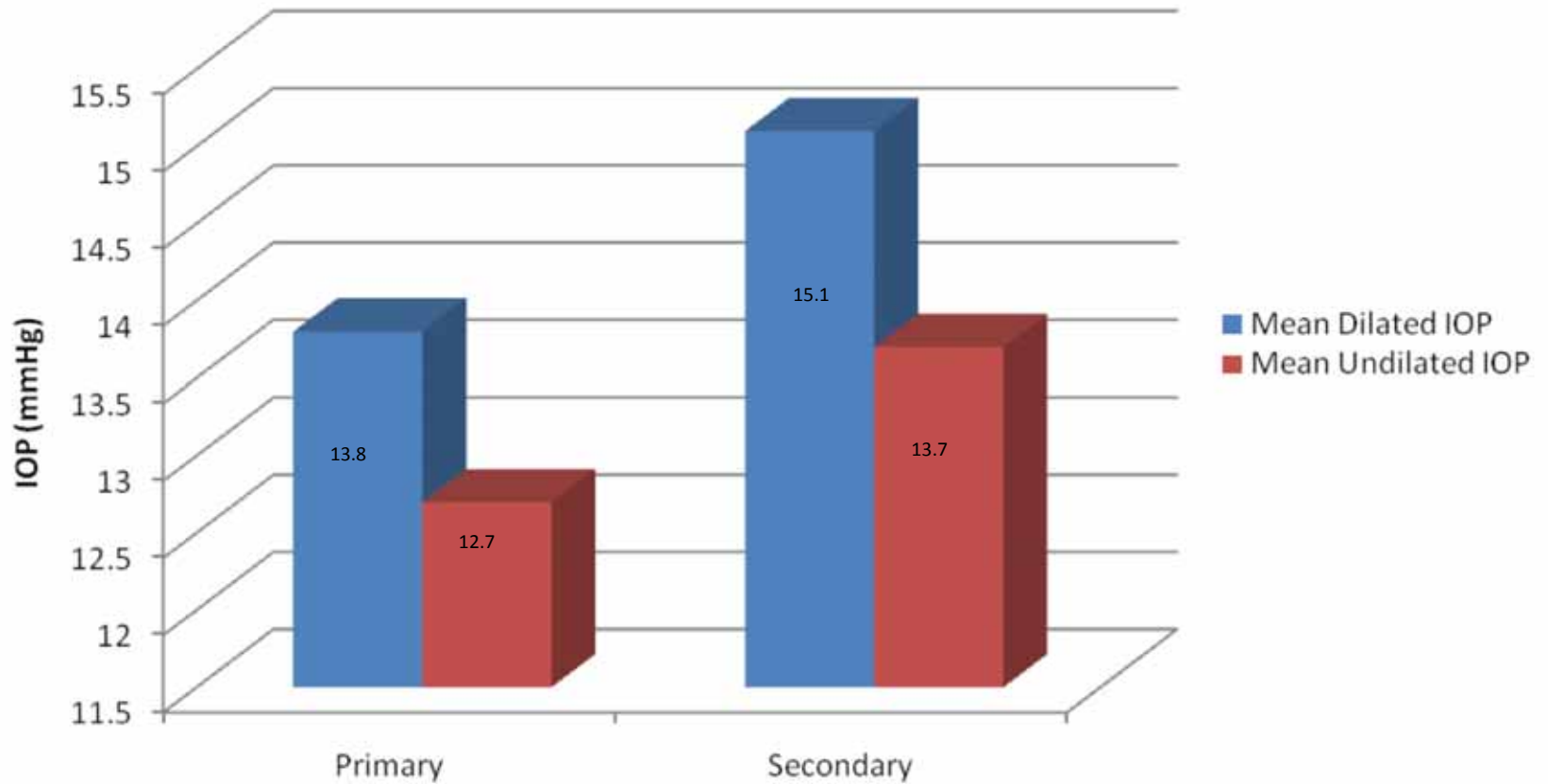
Results

- Mean follow-up was 1180 and 1161 days, respectively, for the primary and secondary groups.
- Eyes treated with SLT as primary therapy showed:
 - Mean undilated IOP of 12.7 mmHg
 - Mean dilated IOP of 13.8 mmHg
- Eyes treated with SLT as secondary therapy showed:
 - Mean undilated IOP of 13.7 mmHg
 - Mean dilated IOP of 15.1 mmHg
- Results were significant with $p < 0.01$.



Results

Mean IOP Dilation





Discussion

- The Glaucoma Laser Trial
 - Established efficacy of laser trabeculoplasty in lowering IOP in previously untreated glaucoma patients¹.
- The Ocular Hypertensive Treatment Study and
- Early Manifest Glaucoma Trial
 - Established efficacy of early and effective treatment to preserve long-term visual function in glaucoma patients^{2,3}
- Our findings build on these studies and suggest, for patients treated with SLT as either primary SLT or secondary SLT therapy, that a dilated pupil results in a small but significant elevation in post-SLT IOP ($p < 0.01$).
- Further study with controlled clinical trials is indicated.

1. The GLT Research Group. GLT. *Ophthalmology*. 1990;97:1403-1413.

2. Kass MA, et al. OHTS. *Arch Ophthalmol*. 2002;120:701-713.

3. Heijl A, et al. EMGT. *Arch Ophthalmol*. 2002;120:1268-1279.



Conclusion

- In this series of over 3,000 eyes followed for more than 7 years:
 - After both primary SLT or secondary SLT treatment, there was a small but significant increase in post-treatment IOP with the pupil dilated as compared with the pupil undilated.
- Results were significant with $p < 0.01$.