



Nine-Years Experience with Selective Laser Trabeculoplasty as Repeat Therapy after Primary and Secondary Treatment

Ellex ESCRS SLT Symposium 2010

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- 1st author has **independently conducted and financed clinical research study** presented and has spoken for Ellex Corp. in the past year.
- 2nd and 3rd authors have no financial disclosure.



Introduction

- **Selective Laser Trabeculoplasty (SLT) uses a Q-switched frequency-doubled (532 nm) 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 intraocular pressure (IOP) reduction²**
- **SLT treats the meshwork without causing any thermal or coagulative damage to surrounding structures^{1,2}**

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 examine the incidence and cumulative probability of success of Selective Laser Trabeculoplasty (SLT) as repeat therapy, after primary and secondary SLT therapy in patients with glaucoma.

➤ Methods

- Retrospective chart review was performed on 2417 uniquely treated eyes, from a consecutive case series of 3034 eyes treated with SLT over 8.5 years. Kaplan-Meier survival analysis was used to find the cumulative probability of success of SLT as repeat therapy, after primary and secondary SLT therapy in patients with glaucoma.



Purpose and Methods

➤ Initial Treatment

- Energy 0.4 to 1.8 mJ
- Angle 240 degrees from 2 to 10 o'clock
- Spots 110 – 130 spots
- Endpoint *Champagne bubbles*

➤ Repeat Treatment

- Energy 0.6 to 2.0 mJ
- Angle 240 degrees from 2 to 10 o'clock (SAME)
- Spots 110 – 130 spots
- Endpoint *Champagne bubbles*



Results



Primary SLT

| Interval | Cumulative Probability of Success | Incidence of 1 st Repeat SLT |
|----------|-----------------------------------|-----------------------------------------|
| 1 year | 97% | 3% |
| 2 years | 95% | 3% |
| 3 years | 93% | 2% |
| 4 years | 85% | 8% |
| 5 years | 82% | 4% |
| 6 years | 72% | 1% |
| 7 years | 52% | 3% |
| 8 years | NA | NA |

Secondary SLT

| Interval | Cumulative Probability of Success | Incidence of 1 st Repeat SLT |
|----------|-----------------------------------|-----------------------------------------|
| 1 year | 73% | 27% |
| 2 years | 54% | 25% |
| 3 years | 41% | 25% |
| 4 years | 34% | 17% |
| 5 years | 30% | 12% |
| 6 years | 24% | 19% |
| 7 years | 24% | 0% |
| 8 years | NA | NA |



Results



Primary SLT 1st Repeat

| Interval | Cumulative Probability of Success | Incidence of 2 nd Repeat SLT |
|----------|-----------------------------------|-----------------------------------------|
| 1 year | 98% | 2% |
| 2 years | 96% | 3% |
| 3 years | 70% | 27% |
| 4 years | 47% | 33% |
| 5 years | 0% | 100% |
| 6 years | NA | NA |

Secondary SLT 1st Repeat

| Interval | Cumulative Probability of Success | Incidence of 2 nd Repeat SLT |
|----------|-----------------------------------|-----------------------------------------|
| 1 year | 94% | 6% |
| 2 years | 85% | 9% |
| 3 years | 70% | 18% |
| 4 years | 50% | 28% |
| 5 years | 27% | 46% |
| 6 years | NA | NA |



Results



Primary SLT 2nd Repeat

| Interval | Cumulative Probability of Success | Incidence of 3 rd Repeat SLT |
|----------|-----------------------------------|-----------------------------------------|
| 1 year | 100% | 0% |
| 2 years | 100% | 0% |
| 3 years | 50% | 50% |
| 4 years | NA% | NA |

Secondary SLT 2nd Repeat

| Interval | Cumulative Probability of Success | Incidence of 3 rd Repeat SLT |
|----------|-----------------------------------|-----------------------------------------|
| 1 year | 95% | 5% |
| 2 years | 92% | 4% |
| 3 years | 92% | 0% |
| 4 years | 92% | 0% |
| 5 years | 92% | 0% |
| 6 years | NA | NA |



Discussion

- **The Glaucoma Laser Trial**
 - Established the efficacy of laser trabeculoplasty to lower IOP in previously untreated glaucoma patients¹
- **The Ocular Hypertensive Treatment Study &**
- **The Early Manifest Glaucoma Trial**
 - Established the efficacy of early and effective treatment to preserve long-term visual function in glaucoma patients^{2,3}
- **Our data build on these findings and demonstrate that SLT significantly lowers and maintains a decreased IOP in eyes treated with SLT as repeat therapy.**

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 large long-term series, Selective Laser Trabeculoplasty was clinically effective, as primary and secondary treatment over almost nine years, with a high cumulative probability of success and low incidence of repeat therapy.
- Initial repeat Selective Laser Trabeculoplasty after primary and secondary treatment had a relatively high cumulative probability of success with a relatively low incidence of repeat therapy over four years.
- This series demonstrates the long-term efficacy for glaucoma therapy of repeat Selective Laser Trabeculoplasty after primary and secondary treatment.



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