

Selective Laser Trabeculoplasty (SLT) - Recommended Treatment Protocol

Clinical Indication:

- Selective Laser Trabeculoplasty (SLT) is FDA cleared for the reduction of Intra-Ocular Pressure (IOP) in patients with Open Angle Glaucoma (OAG)
- Successful IOP reduction following the application of SLT has also been reported in patients with Ocular Hypertension, Normal Tension Glaucoma, and in Secondary Glaucoma such as PXF, pigmentary or steroid induced glaucoma

Patient Selection:

- SLT fairs best (i.e. optimal clinical outcomes achieved) when used as primary therapy in newly diagnosed patients
- Optimal clinical outcomes achieved when following the more aggressive treatment protocol of 360° (100 pulses) versus 180° (50 pulses)
- Effective results can be achieved as adjunctive and replacement therapy
- Success rates appear to be higher when initial baseline IOP is relatively high
- Success rate tends to decrease if SLT is performed late in the process (e.g. advanced glaucoma patients while on maximal medical therapy). These patients may have obstructed or damaged outflow system, thereby limiting the effect of SLT
- Success rate tends to be lower in combination with or following the usage of any pharmacological “outflow” agents, such as prostaglandin analogues (e.g. Latanoprost, Bimatoprost, Travoprost, etc)
- Success rate has been reported as independent of TM pigmentation level; however treatment outcome tends to be more favorable with highly pigmented TM
- Ideal for patients who are unlikely to comply or persist with prescribed drug therapy and/or have difficulties administering drops properly
- Ideal for active patients that may suffer reduction in quality of life due to prescribed Medication

Contra-Indications:

SLT should not be used on patients with neovascular glaucoma (NVG)

Pre-Laser Treatment

- Depends on physician preference
 - Topical anesthesia (e.g. proxymetacaine hydrochloride)
 - Prophylactic application of alpha agonist or equivalent agent (e.g. brimonidine) to avoid post-op pressure spike – recommended (particularly with heavily pigmented eyes and/or when performing 360°)

SLT Laser Parameters:

- **Pulse Duration:** 3 nanoseconds (preset)
 - The SLT pulse duration correlates to the thermal relaxation time (TRT) of melanin – the target chromophore in the Trabecular Meshwork – to facilitate selective absorption
- **Spot Size:** 400 microns (preset)
 - Aim to cover the AC angle
 - Given the rather large spot size, some “overspill” (i.e. above Schwalbe’s line and/or below on the iris) is expected. This should not be a source of concern as, when used properly and according to protocol, SLT is not a thermal laser and it will not cause damage (e.g. PAS). It is hypothesized that slight absorption in the iris pigment actually enhances the therapeutic effect of SLT. However, application to iris may cause some pain and discomfort to patient
- **Energy range:** 0.2 – 2.0 mJ. Energy should be titrated until therapy end-point is identified

Contact Lens:

- It is highly recommended to use the provided “Latina” SLT Gonio lens
- Other gonio lenses with no magnification may be used (change of the spot size will alter beam diameter and energy)

Treatment Methodology:

- Covering 360° of the Trabecular Meshwork will provide the best therapeutic results (360° efficacy has also been proven equivalent to Latanoprost in clinical trials)
 - Covering 180° of the Trabecular Meshwork has also been used– though with a somewhat lower degree of success rate.
- Deposit 100 laser pulses when covering 360° of the Trabecular Meshwork (or 50 laser pulses, when covering 180°)
- Due to variations in pigmentation levels across the TM: if treating only 180°, it is recommended to treat the inferior or the nasal half of the trabecular meshwork

Treatment Settings & Dosimetry:

- Start at 0.6 mJ and adjust power in order to reach treatment endpoint (cavitation bubbles - colloquially referred to as “champagne bubbles”)
- Highly pigmented TM will normally require lower energy (approximately 0.6 - 0.8 mJ) in order to reach treatment endpoint (cavitation bubbles)
- Lightly pigmented TM will normally require higher energy (approximately 0.8 - 1.3 mJ) in order to reach treatment endpoint (cavitation bubbles)
- When reaching the treatment endpoint (cavitation bubbles), scale down the energy level by 0.1 mJ and remain on that threshold throughout treatment
- It is recommended to re-evaluate threshold following the treatment of each quadrant, due to variations in TM pigmentation

Post-Laser Treatment

- Depends on physician preference
- Patient follow up one hour post treatment
- For consideration:
 - No Rx
 - NSAIDS up to 2-3 days post-op, or depending on the level of patient discomfort
- Special note: it is not recommended to prescribe steroidal medication as it may potentially interfere with the SLT mechanism of action.

Potential Adverse Effects:

There are minimal observable side effects resulting from SLT treatment; these include mild discomfort during the procedure and tender eyes, perhaps with mild photophobia, for 2-3 days. In a small percentage of cases (<10%) some postoperative increase in IOP has been observed, usually appearing within the first 24 hours and disappearing within a further 24 hours. The absence of adverse side effects is one of the major benefits of SLT treatment.

Patient Follow-up:

- Case by case basis: unique risk and/or patient accessibility to health-care provider
- One hour post therapy to check for IOP level
- Two weeks; six weeks; three months; and six months following therapy

Special caution:

- Pigmentary glaucoma patients should be treated very conservatively!
- Treat only 90° (one quarter) of the Trabecular Meshwork
- Do not exceed 0.4 mJ of energy
- Use a prophylactic agent (e.g. brimonidine) to avoid post-op pressure spike; use NSAID to avoid post-op inflammation
- Follow-up as required (minimum 1-hour post Tx, following day post Tx, 2 weeks post Tx, 6 weeks post Tx, 3 months post Tx)

Results:

- Successful drop in IOP may be evident 1-2 days post treatment
- Some patients may only respond after several weeks – response after 3-6W usually a good indicator of treatment success

The above treatment guidelines are based on the results of clinical studies and are provided for information purposes only. Treatment protocol should only be determined by the treating physician, on a case-by-case basis, and per the specific condition of each patient.

Re-treatment:

- Allow up to three months before retreating the patient – as some may exhibit delayed response to SLT therapy
- Treat the other 180° of the TM (if the first procedure covered only 180°)
- Treat additional 180° (enhancement therapy) or 360° (complete retreatment) if the first procedure covered the entire 360° of the TM

Other:

- Some avid SLT users claim to have achieved better success rates after washing out patients from prostaglandin-analogs (ranging from a few days prior to the SLT treatment and up to 3 months before – replacing the prostaglandins with alternative agents)
- If the patient is on drops and IOP appears to be under control (i.e. at target), remove the drops following the SLT treatment (even if there is no additional reduction in IOP) as the effect of SLT may act as replacement for the existing drops. Monitor the patient's IOP closely to ensure it remains at target.