

Laser Trabeculoplasty

- SLT Mechanism of Action: Exact mechanism is unknown but it is thought that biologic effects with increased inflammatory cells with "clean up" the TM
 - Laser energy causes chemical mediators to attract macrophages and phagocytes to come and clean up the debris in the TM.
- SLT: Q switched fd Nd:YAG. $\lambda = 532\text{nm}$
 - Permits selective targeting of pigmented TM cells w/o causing structural or coag damage to the TM
- Tissue interaction: Sub-lethal Photostimulation
 - Tissue $\uparrow 10\text{-}20^\circ\text{C} / 50\text{-}100^\circ\text{F}$
 - Thermal Relaxation Time of Melanin = 1 microsecond
 - SLT pulse duration = 3 nanoseconds, so no thermal damage ("cold laser"). Since pulse duration is so quick, melanin cannot convert the laser electromagnetic energy into thermal energy.

Indications:

- POAG
- NTG
- Pigmentary Dispersion GLC
- PXG

Contraindications:

- Advanced POAG
- Narrow Angle GLC
- Angle Closure
- Inflammatory GLC
- Angle Recession GLC
- NVG
- Congenital GLC
- Prior LTP failed
- < 40 years of age
- Hazy media

Risks/Complications:

1. IOP spike/elevation (most often transient)
 2. Inflammation
 3. Stroma Haze / Edema
 4. PAS - less likely due to no scar tissue formation, but may increase IOP long-term
- ★ **MAX: 25-30 shots per quadrant, 45-60 per 180°**
- ★ **Best indicator/predictor for SLT success = pre-laser IOP**
- (PGA responders tend to be SLT responders)
 - D/C PGA x 1 month, then perform SLT if IOP $\uparrow$

Pre-Op Exam:

- Gonio - R/O angle recession & PAS
- Slit Lamp Exam - R/O NVG & inflam. GLC
- IOP's
- Educate Patient
- Informed Consent Signed
- Take vitals - BP & Pulse
- **Pre-op Drops:**
 - 1 drop Alphagan or Iopidine 15-30 minutes prior
 - 1 drop Pilocarpine 1% (optional)

Laser Settings:

- Energy: 0.6-1.2 mJ (0.8-1.0mJ most often)
- Spot Size: 400 microns
- Duration: 3 nsec
- Pulses: 1

Procedure:

- Sit patient comfortably
- Adjust laser for Doctor comfort
- Instill Proparacaine in OU
- Apply laser lens with celluvisc/goniosol (Latina 1:1)
- Gonio mirror @ 9:00 or @ 3:00
- Tx 360° unless significant pigment in the TM, then only Tx 180°. (2nd eye in 4-6 weeks so effect of the 1st Tx eye is known)
- Lg spot size - cover entire TM
 - Aim less critical than ALT and is easier to do
- Adjust energy as needed (start 0.8 mJ)
 - No blanching with SLT
 - Small bubble formation
- Space burns right next to each other
 - 25-30 shots per quadrant OR 45-60 shots per 180°

Post-Op Care:

- Remove laser lens
- Rinse Eye/Clean eye
- 1 drop of Alphagan or Iopidine post-laser
- IOP measurement 15-30 minutes post-laser
- Continue all GLC meds
- Give Patient Post-op meds = NONE, unless patient has discomfort then NSAID (nevanac) tid x approx. 3 days
- RTC 1-2 week for post-op f/u

At 1-2 week Post-op follow up:

- VA's
- Anterior segment exam
- Check for cell/flare
- Check IOP

At 6 week Post-op follow up:

- Check IOP
- Start to consider $\downarrow$ in GLC meds if IOP $\downarrow$
- Expect 20-30% IOP reduction in most patients
- 80-90% effectiveness at 1 year
- 40-50% effectiveness at 5 years
- 10-30% effectiveness at 10 years
- (May consider Tx superior 180 degrees if 360 degrees not treated initially)