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. $\lambda = 532nm$
  - Permits selective targeting of pigmented TM cells w/o causing structural or coag damage to the TM
- **Tissue interaction**: Sub-lethal Photostimulation
  - Tissue ↑ 10-20°C / 50-100°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 ↑

**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 lopidine 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 ↓ in GLC meds if IOP ↓
- 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)