LASER Therapy in Glaucoma

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Method of choice for treatment-

Where the medical modalities prove inadequate.
Where the pts compliance with medical regimens is poor
In general-less invasive
Carries fewer risks
Results in fewer complications.

Indications

Iridotomy.
Trabeculoplasty.
Selective laser trabeculoplasty.
Iridoplasty.
Gonioplasty.
Goniophotocoagulation.
Cyclophotocoagulation.
Pupiloplasty.
Laser synechiolysis.
Suturolysis.
Reopening of failed filtration sites.

Iridotomy

Indications- primary angle closure glaucoma with pupillary block (acute/sub acute/chronic)
Secondary angle closure glaucoma(aphakic/pseudophakic)
Prophylactic iridotomy in fellow eye of patient with acute aeg
Malignant gl.
Nanophthalmos
Combined mechanism gl.

Prerequisites

Absent to minimal a.c inflamation
Clear cornea
No irido corneal adhesion at the site of iridotomy

Technique

Pulsed nd yag/ argon laser used
Use pilocarp. 2%,propa. 0.5%,abraham lens
Magnification 16 x - 25x
Ideal site-under upper lid cover,close to the limbus,within an iris crypt.
Laser parameters-ND-YAG laser burst mode, 1-3 pulses/ burst, 4-6 mj energy/ per pulse, spot size 50 mic.
Argon laser - 1000 mw power
Duration- 0.05 sec-darkbrown iris
0.1sec.-med. Brown iris
0.5sec- blue iris

Complications

Transient increase in iop
Blurred vision
Pupillary distortion
Corneal burns
Lenticular opacities
Delayed closure
Malignant gl.
Retinal burns
Increased chances of encapsulated blebs

Trabeculoplasty

Indications-
High risk pts for invasive surgery.
Pt. Not willing for surgery.
Poor tolerance to gl. Medications.
Predictors for alt success

Technique

Magnification 16- 25x
Argon laser 20 - 25 spots per quadrant.
50mic. Spot size.
0.2sec. Duration.
400-700mw(max.1200)Gap of 2 spots in betw. Spots.

Ideal site- at the junc. Of pigmented and nonpigm. Part of trabm.

Selective laser trab.(slt)

Selectively targets pigm. Tm cells.
Techniques-q switched 532 nd yag laser
Pulse -3 usec.
Spot size 400 mic
Energy 0.7-0.1 mj
Number of spots 40-60
Advantages slt
Less destructive than alt
Earlier decrease in iop.
Lesser rise of iop & lesser inflammation
Could be repeated many times

**Iridoplasty**

**Indications**
Prior to trabeculoplasty, iridotomy etc. To improve visualisation of angle structure.
Plateau iris synd.
Agc. With early pas.

**Technique**

- **Parameters** - 300 mic. Spot size
  - 0.2- 0.5 sec.
  - 100-400 mw power
  - 5-6 spots per quadrant with gap of 2 spots over 360

**Goniophtocoagulation**

Ablation of new vessels in the region of ac. Ang as he cross the scleral spur

**Indications**
Early n.v.of ac. ang./peripheral iris

**Technique**
- use app. Cont. Lens
- If narrow ang. Proceed with iridoplasty
- Focus the beam directly over the new vessel formation.

- **Parameters** - argon laser used single pulse
  - 100 mic. Spot size
  - 0.2 sec duration 150-500mw power

**Complications**
Variable bleeding into ant.chamber.
Recurrence of nv.

**Cyclophotocoagulation**

Reduces the rate of aq. Prod. By ablation of ciliary processes.

**Indications**
in symptomatic eyes with poor vision in which multiple invasive surgeries have failed eg. Ntg inflammatory gl.

1. Transcleral cyclophotocoagulation
2. Transpupillary cytophotocoagulation
Ciliary processes visible gonioscopically. In areas of wide sector iridectomies or when the fibrovascular membrane contracts causing retraction and forward displacement of iris

- **Parameters**
  - 700-1000 mw
  - 100-200 mic. Spot size.
  - Duration - 0.1-0.2 sec.
  - 180 deg. In first session
  - 3-5 laser burns to each visible portion of cl. Process

**Complications**
Mild to severe pain
Reduced va.
Iritis
Haemorrhage
Increase iop
Phthisis bulbi
 Conjunctival oedema
Scleral thinning

**Pupilloplasty**

Used in miotic pupils
Nd:yag/argon laser used

- **Parameters** - 200 mic. Spot size
  - 200-500 mw
  - 0.1-0.2 sec.

Apply in a row close to the pupillary border just peripheral to the sphincter.

**Laser synechiolysis**

Indications - to pull early/ lightly adherent pas away from the ang / cornea eg pas after p.k,ice synd.

- Argon laser used
- **Parameters** - 0.1-0.2sec.
  - 50-100 mic. Spot size
  - 400-800 mw power

**Cyclodialysis**

Can be used to open or close cyclo. Clef
For opening q switched ndyag laser used single pulse 3.8 mj energy
For closing argon laser used 0.1 sec. ,100 mic. Spot , 500mw energy

**Suturolysis**

Argon laser used
A hoksin/gonio. Lens used
- **Parameters** - 200- 1000 mw
Reopening of failed filtration sites

Used if pigm. Tissue is obstructing the sclerotomy or if there is episcleral fibrosis.

Argon & ndyag laser used respectively

Parameters (argon) - 300-1000mw

0.1-0.2 sec

50-100 mic. Spot size

(ND:YAG) - 2-4 mj

Lasers are a valuable adjunct in our surgical armamentarium

Thank you