

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.
Pupilloplasty.
Laser synechiolysis.
Cyclodialysis.
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 acg
Malignant gl.
Nanophthalmos
Comined mechanism gl.

Prerequisites

Absent to minimal a.c inflammation
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 parmeters-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
0.1secs.-med. Brown iris
0.5secs- blue iris

Complications

Transient increase in iop
Blurred vision
Iris bleeding
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.
Inferior 180 first
End point-visible air bubble or blanching

Selective laser trab.(slt)

Selectively targets pigm. Tm cells.
Techniques-q switched 532 nd yag laser
Pulse -3 nsec.

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

Pror to trabeculoplasty, iridotomy etc. To improve visualisation of angle structure.

Plateau iris synd.

Acg. 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

Goniophotocoagulation

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. Preceed 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. Nvg inflamtory 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 visile portion of cl. Process

End point-white shrunken and irregular cl. Processes

Complications

Mild to severe pain

Reduced va.

Iritis

Haemorrhage

Increase iop

Phthisis bulbi

Conjunctival oedema

Scleral thinning

Pupilloplasty

Used in miotic pupils

Ndyag/argon laser used

Parameters- 200 mic. Spot size

200-500 mw

0.1-0.2 sec.

Apply in a row close to the pupillary boder 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. Cleft

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 hoskin/gonio. Lens used

Parameters- 200- 1000 mw

0.02- 0.15 sec

50- 100 mic.spot size

Reopening of failed filtration sites

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

Argon & ndyag laser used repectively

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