

Anterior Segment Laser Procedures

"Study Guide"

- 1) When an "excited" atom or molecule of the laser medium reverts to its ground state energy level, it emits light energy in discrete packets called:
- 2) TRUE or FALSE Shorter wavelengths of light are associated with greater scatter tendencies?
- 3) Longer wavelengths of light penetrate _____ into ocular media.
- 4) Light that consists solely of 300 nm wavelength radiation is classified as UV? Visible? Infrared?
- 5) When the majority of the atoms or molecules within the laser medium have been "energized" into their excited states, and few atoms or molecules remain in the stable, low-energy ground state, the situation is called:
- 6) The neodymium-YAG laser emits energy at what wavelength? _____ nm How would this energy be classified? UV? Visible? Infrared?
- 7) If the wavelength of a nd:YAG laser is doubled the resulting wavelength would be _____ nm and would be classified as UV? Visible? Infrared?
- 8) TRUE or FALSE The excimer laser is a photocoagulator
- 9) TRUE or FALSE "Pulsing" a laser boosts the power of the energy delivered
- 10) Which spectral emission is most likely to injure ("burn" or treat) the cornea if focused directly upon it at a low power setting? UV? Visible? Infrared?
- 11) Based upon the ANSI classification scheme, ophthalmic lasers, as routinely used in clinical situations, are categorized as what class:
- 12) TRUE or FALSE Compared to regular incoherent light, laser light is considerably less divergent
- 13) What type of tissue reaction occurs with the nd:YAG used for capsulotomy? Is this reaction pigment dependent?
- 14) TRUE or FALSE It is impossible for laser light to be reflected from the optical interfaces within the eye.
- 15) TRUE or FALSE The occurrence of IOP "spiking" CANNOT be predicted with any high degree of certainty (i.e. no clear cut predisposing factors have been statistically correlated with IOP spikes)
- 16) TRUE or FALSE Energy within the IR region is absorbed relatively poorly by melanin
- 17) TRUE or FALSE Hemoglobin absorbs energy in the IR range better than in the Visible blue-green range.

- 18) TRUE or FALSE An albinotic fundus would require more power of a shorter wavelength to accomplish photocoagulation
- 19) TRUE or FALSE Xanthophyll absorbs blue wavelengths exceptionally well. It is concentrated around the fovea.
- 20) Which form of laser iridotomy will produce cauterization, and therefore, fewer problems with hyphema? Photodisruption (nd:YAG 1064) or Photocoagulation(FD nd:YAG 532)
- 21) TRUE or FALSE Selective Laser Trabeculoplasty is laser therapy indicated for the management of acute angle closure attack.
- 22) TRUE or FALSE Laser iridotomy is indicated for the management of angle closure glaucoma associated with papillary block
- 23) What are the two most common complications associated with anterior segment laser procedures?
- 24) When is the most common time for an IOP spike if it is going to happen? When will it normally dissipate?
- 25) What is the most common time frame for CME to be observed?
- 26) TRUE or FALSE Current practice dictates that a successful laser capsulotomy is accomplished only after a very large (6mm+) "window" is created through the opacified membrane.
- 27) TRUE or FALSE YAG laser capsulotomy is indicated when visual function is compromised.
- 28) Which form of intraocular lens is easiest to "pit" with a YAG laser: PMMA, Acrylic, Silicon
- 29) TRUE or FALSE Argon laser trabeculoplasty is classified as a "filtering procedure" since it involves the creation of a hole through the thickness of the sclera.
- 30) TRUE or FALSE Laser iridotomy is considerably more difficult to perform, and often more painful for the patient when the eye is "hot" and inflamed. Therefore, try to quiet the eye medically, before applying the laser treatment.
- 31) The absolute maximum number of laser pulses that should be applied to perform a capsulotomy is:
- 32) TRUE or FALSE Pain during a YAG capsulotomy would be considered highly atypical of an uncomplicated procedure.
- 33) What is the desired tissue response when performing an ALT? SLT?
- 34) TRUE or FALSE Argon Laser Trabeculoplasty is a thermal laser procedure and is influenced by pigmentation within the angle.

- 35) TRUE or FALSE Alphagan is a topical beta-blocker indicated for purposes including the “blunting” of IOP “spikes” following anterior segment laser procedures.
- 36) What is the mechanism of Alphagan?
- 37) TRUE or FALSE Once a patient has undergone ALT and SLT CANNOT be performed over the ALT
- 38) TRUE or FALSE SLT is most effective when performed while the pupil is widely dilated.
- 39) TRUE or FALSE YAG laser iridotomy is most effective when performed while the pupil is widely dilated.
- 40) TRUE or FALSE Strong miotics are contraindicated in the management of post-iridotomy iritis
- 41) TRUE or FALSE All patient on prostaglandin glaucoma meds should be taken off their medications at least 4 weeks prior to anterior segment laser surgery.
- 42) What Pre-Op meds are used for Capsulotomy? Post Op meds? Laser Settings? Indications? Contraindications? Possible Complications?
- 43) What Pre-Op meds are used for Iridotomy? Post Op meds? Laser Settings – photocoagulator Vs photodisruptor? Indications? Contraindications? Possible Complications?
- 44) What Pre-Op meds are used for SLT? Post Op meds? Laser Settings? Indications? Contraindications? Possible Complications?
- 45) What Pre-Op meds are used for ALT? Post Op meds? Laser Settings? Indications? Contraindications? Possible Complications?
- 46) What Pre-Op meds are used for Iridoplasty? Post Op meds? Laser Settings? Indications? Contraindications? Possible Complications?



Procedure	Laser	Tissue Reaction	Initial Energy/Power	Spot Size	Duration	Follow-up	Pre-Op Meds	Post - Op Meds	Other Notes
YAG Capsulotomy	Nd:YAG (1064 nm)	Photodisruption Pigment Independent	1.3 - 1.8 mJ	Fixed	Fixed	1 hr, 1 wk	Alphagan, Dilate	Alphagan in office, Steroid gtts QID x 1 wk	Cruciate Pattern; normal 40 shots or less caution with more - watch total energy
YAG Iridiotomy (PI)	Nd:YAG (1064 nm)	Photodisruption Pigment Independent	3.0 - 3.5 mJ single shot	Fixed	Fixed	1 hr, 1 wk	Alphagan, 1% pilocarpine	Alphagan in office, Steroid gtts QID x 1 wk	Aim for crypt at 11 or 1 o'clock 2/3 or more from limbus, allow time between shots, watch for plume, 0.5 - 1mm minimum opening
Argon Iridiotomy (PI)	Argon or FD YAG (532 nm)	Photocoagulation Pigment Dependent	600 - 1200 mW	50 micron	0.1 - 0.2 second	1 hr, 1 wk	Alphagan, 1% pilocarpine	Alphagan in office, Steroid gtts QID x 1 wk	Same as YAG PI. Can pretreat with Argon then finish with YAG. Argon more inflammation harder to penetrate, less bleeding
ALT	Argon or FD YAG (532 nm)	Photocoagulation Pigment Dependent	600 mW	50 micron	0.1 sec	1 hr, 1 wk, 6 wk	Alphagan, 1% pilocarpine if needed to view angle	Alphagan in office, Steroid gtts QID x 1 wk	↑Pigment then ↓Power, 50 - 55 burns per 180°, 1 - 2 spot sizes between burns, Aim for junction of Pigmented/Non- Pigmented TM, patient to stay on all glaucoma meds
SLT Argon Laser	FD YAG with 3 nsec burn (532 nm)	Photocoagulation Pigment Dependent	0.8 - 1.0 mJ	400 micron	3 nsec	1 hr, 1 wk, 6 wk	Alphagan, 1% pilocarpine if needed to view angle	Alphagan in office, topical NSAID PRN X 2 days	↑Pigment then ↓Power, 50 - 60 burns per 180°, burns right next to each other - treat entire TM, patient to stay on all glaucoma meds
Peripharal Iridoplasty (ALPI) AKA Gonioplasty	Argon or FD YAG (532 nm)	Photocoagulation Pigment Dependent	200 mW	500 micron	0.5 sec	1 hr, 1 wk	Alphagan, 1% Pilocarpine	Alphagan in office, Steroid gtts QID x 1 wk	6 burns per quadrant (20-25 shots total) in periphery to pull iris away from angle
Trichiasis	Argon or FD YAG (532 nm)	Photocoagulation Pigment Dependent	800 then 1200 mW	50 micron	0.1 then 0.2 sec	1 week	topical anesth, injection	Abx/Steroid ung QID	Rose Bengal can help as pigment. Place 4 -5 shots then change setting, Attempt to shoot crater to kill follicle
Punctal Occlusion	Argon or FD YAG (532 nm)	Photocoagulation Pigment Dependent	400 then 1200 mW	50 then 100 micron	0.2 then 0.5 sec	1 week	topical anesth, injection	Abx/Steroid ung QID	Ring of burns around puncta, change settings, burn down puncta 2 mm
Benign Lid Lesions	Argon or FD YAG (532 nm)	Photocoagulation Pigment Dependent	1.5 to 2.0 W	50 micron	0.4 sec	1 week	topical anesth, injection	Abx/Steroid ung QID	Burn lesion until flush with surrounding tissue