

Laser Surgery Tattoo Removal

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Why use Lasers

- Other treatments used are quite extreme such as surgical excision (cutting out the tattoo).
- Dermabrasion (sanding out the tattoo)
- Salabrasion (using salt to abrade the tattoo)
- Chemical Peels (using chemicals to peel the tattoo literally off the skin)
- Lasers are the most efficient and safest way and uses a principle known as photothermolysis, the laser targets the ink in the skin only, not the surrounding tissue, tissue is unaffected by the treatment.

Different types of Lasers

- Nd:Yag Laser Q-switched,Wavelength is 1064 and 532nm treats broad range of colors blue,black,red tattoos as well as pigmented regions,low operating and service costs.Provides fast treatment of tattoo pigments,optimizing physicians time.
- Alexandrite Laser Q- switched wavelength 755 nm treats pigmented lesions blue,black and green,deep penetration ,minimizes skin texture minimal scarring,tissue splattering and pin point bleeding less pain for patient.
- Erbium Yag Laser Q-switched wavelength 300nm treats light colored tattoos and skin resurfacing very little scarring.

Wavelength Properties

- **Color of light** indicates which pigments will be absorbed and which will be reflected.
- **Length of the flash** dictates how far the heat spreads
- **Lasers** can only produce certain colors limits the range of colors that can be treated.
- **Laser light** is used for removing tattoos is in the visible range and infrared range is not cancer forming.
- **Number of laser treatments** usually is 4 to 5 with a success rate of 92 to 98 percent.

Q-Switching

- Mechanism often used to control light output
- Pulse with very high peak powers
- Fast electromagnetic switch
- Population inversion effect
- Longer visible wavelengths
- After treatment of Q-switched

Specifications of Lasers

Nd:yag Alexandrite Erbium:yag

Wavelength(nm)	1064-532	755	300
Pulse Duration (ns)	10	50	300u
Pulse rate (Hz)	1,2,5,10	5	15
Spot size (mm)	2 to 4	3	6
Energy Density (J/cm²)	12	10	2
Delivery System	Articulate arm	Optical fiber	————
Weight (Lbs)	150	250	225

Tattoo Removal Process

- Patients wear protective goggles and are asked to close their eyes.
- Treated areas are overlapped by 10-15% of the beam diameter moving the laser hand piece over the tattoo. Most patients are treated without anesthesia. If desired by injection 1-2% lidocaine with epinephrine.
- Immediately after the Q-switched pulse is applied a raised white ash discoloration is present.
- Healing creams are needed on the treated areas for a couple of days after treatment.
- Usually there are 4 to 5 laser treatments people have to go through depending on several factors the age of tattoo, size, location, depth and color.

Treatment before and after

- **Before Surgery** Use EMLA anesthetic cream on area 2 hours before treatment to numb area if needed a local anesthesia will be injected into the tattoo area site prior to treatment. Patients will have to wear protective goggles and also close their eyes during the session.
- **After Surgery** Use a topical antibiotic cream is recommended .Use an ice pack if needed .Avoid scrubbing the area with abrasive cleaners, very important no tanning avoid sun on treated area.

Before and After Pictorals



Using a Nd:Yag Laser which signifies best results

Summary

- Lasers are the best application to remove tattoos least scarring,most effective,breakthrough in technology.
- Different wavelength's determine which pigments will be absorbed and reflected.
- Usage of different lasers for different color application,skin color,tattoo color.
- Q-switching mechanism to control the output of light pulses at very high peak powers.
- Treatment is very minimal before and after the laser procedure.
- No harmful side effects from procedure,very safe vs chemical peels,dermabrasion,excision.

References

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