

## ACNE SCAR TREATMENT - ENERGY DEVICES

Dr. Emil Henningsen is specialized in the treatment of acne scars and is internationally respected as an expert in this field. He performs all forms of fractional and fully ablative laser resurfacing procedures, non-ablative lasers, RF microneedling, plasma exeresis, chemical peels and cross and more.

There are many different laser brands worldwide a lot of marketing. The name of the device is less important than *the treatment method* and the skills of the specialist. A supreme laser in the wrong hands can lead to formation of new scars or only minimal improvement. Any top brand laser for the wrong scar type will never improve that particular scar. However, the best lasers from well-known companies are safer and deliver very uniform and predictable results.

### The key to success lie in tailormade scar revision

Most patients look for lasers, because lasers are found everywhere online. However, lasers and energy devices may not be the best treatment option for everyone. Most acne scar patients will have multiple scar types, and scar morphology will change over time with a treatment course. Hence, the best treatment is a multi-method treatment suited to your type of scars. We will discuss treatment options based on your skin condition, skin type, time frame, downtime, budget, etc.

### How many treatments and how much time will I need?

Scar revision is a highly complex and variable procedure that requires patience from both patient and specialist to get the best possible results. Many patients return 4-8 times for treatment with 3-6 month or longer intervals. Most patients treat over 2-3 years.

### What kind of treatment works best for my scars?

Dr. Emil Henningsen will guide you through the treatment process to decide which treatment to choose at any particular point in your treatment course. Most of the times we combine multiple lasers and non-laser treatments in the same treatment to provide the best outcome. The use of multiple treatment methods form the basis of your individual acne scar revision program.

### What is the difference between CO2 and Erbium lasers?

The main difference are in the wavelengths. Erbium lasers produce 2,940 nm wavelength light, CO2 lasers produce 10,600 nm wavelength light. The wavelength determines the effect on the skin. Both Erbium and CO2 lasers are ablative. This means that CO2 and Erbium lasers remove fractions of the skin (fractional setting) or the entire surface of the skin (re-surfacing). Erbium lasers are strongly absorbed in water, so the Erbium laser does not produce as much heat in the skin and Erbium laser has shorter downtime and less risk of side-effects compared to CO2 lasers that are not absorbed in water. CO2 lasers produce more heating and, in general, are slightly more effective in skin remodelling due to collateral heating of tissue. Both wavelengths are

considered safe for acne scar revision. This results in smoother skin with less scarring. Final results are seen months after the treatment.

## What about Isotretinoin and laser?

Most laser procedures are safe on patients treated with Isotretinoin. Dr. Emil Henningsen has treated many patients on Isotretinoin with no complications. Recent studies and papers have confirmed this. Have a look at this recent consensus report:

<https://jamanetwork.com/journals/jamadermatology/article-abstract/2632046?redirect=true>

## So, what lasers and energy devices do we offer?

**Ablative lasers:** CO<sub>2</sub> (10,600 nm) and Erbium:YAG (2,940 nm)

The most potent lasers on the market for skin treatments are CO<sub>2</sub> and Erbium lasers that are ablative lasers. These are used to remove fractions of skin (fractional ablative laser treatment) or for full skin surface resurfacing (fully ablative). Dr. Emil Henningsen does all of these procedures.

**Vascular lasers:** Pulsed dye laser (585 nm) and Nd:YAG (1,064 nm)

Pulsed dye laser is a non-ablative laser, which is very effective for treatment of early, red scars. The laser is highly absorbed in hemoglobin heating the blood vessel to destroy this. Indications are fresh red scars, hypertrophic scars and keloids, redness after ablative lasers

Nd:YAG laser penetrates the skin deeper due to the longer wavelength which may be used for large blood vessels in hypertrophic scars and for resistant redness after acne

**Pigment lasers:** Q-switch Nd:YAG (1064) and KTP (532 nm)

Q-switched nd:YAG laser is a good laser for pigmented scars and post-inflammatory hyperpigmentation (PIH). More treatments are needed for better outcome. 1064 nm targets deeper dermal pigment, whereas 532 nm targets superficial epidermal pigment. There is no downtime after Nd:YAG laser, but expect one week downtime after KTP laser. Both lasers may be combined with bleaching agents such as Hydroquinone for home use.

**Radiofrequency (RF) microneedling:** Genius

Insulated needles deliver RF energy from each of 49 small encapsulated needle tips that penetrate the skin to a certain depth up to 3.5 mm. This treatment remodels your dermal skin with minimal trauma to the skin surface. Downtime is usually short (3-4 days). This is a very new energy device that has replaced the "Infini" by Lutronic. Genius is indicated for a large spectrum of acne scars and is effective for rolling scars and boxcars.

**Plasma exeresis**

Plasma exeresis is not laser and is rarely used in acne scar revision. Plasma is capable of removing areas of elevated tissue by evaporation and ablation, but the penetration depth is poorly controlled by the operator and the risk of PIH is high.

## What brands do we have on stock?

CO2 laser: MedArt Intenz (10,600 nm) - fully ablative and fractional ablative

Erbium YAG laser: Fotona Dynamis SP (2,940 nm) - fully ablative and fractional ablative

Pulsed dye laser: Regenlite Transform (585 nm) - non-ablative

Q-switched laser: Fotona QX max (1,064 nm) - non-ablative

Long-pulsed nd:YAG laser: Fotona Dynamis SP (1,064) - non-ablative

RF microneedling: Genius, Lutronic - fractional ablative

Plasma: PlexR, GMV - ablative

Our lasers are all quite new - between 0-5 years old. All our lasers are continuously maintained according to the recommendations of the manufacturer. Danish Health authorities ([www.stps.dk](http://www.stps.dk)) do regular inspection visits at our clinic.

## What is fractional laser treatment?

Fractional laser resurfacing treats 'fractions' of skin enabling quicker recovery and shorter downtime for patients. Most patients will benefit from a series of fractional laser treatments.

Facts on fractional laser for scar treatment:

- Fractional CO2 and Erbium lasers are effective for acne scar treatments
- Fractional resurfacing treats a portion of your skin
- Using a scanner the doctor can control the percentage of skin treated
- Fractional lasers have shorter recovery time and lower risk of complications compared to fully ablative laser resurfacing
- Up to 70% improvement of superficial and textural scars can be seen after four treatments
- Side effects are generally rare and laser procedures are very well tolerated
- Recovery time may be tailored according to your preferences, typically 3-5 days
- Erbium fractional laser has shorter downtime compared to CO2
- Erbium fractional lasers are safer in darker skin compared to CO2
- CO2 fractional lasers have longer downtime, however they deliver slightly better outcomes
- Pulsed dye lasers are brilliant for treating fresh / red scars and typically two treatments are needed spaced 3-4 weeks
- Everyone will have an individual pattern of acne scarring, and a bespoke treatment program will give superior results
- RF microneedling (Genius) is not a laser but it is also fractional in the way that it penetrates fractions of skin and delivers radiofrequency (heat) to the dermis

## What does 'ablative' mean?

Ablation means skin removal. Ablative lasers (CO2 / Erbium) remove a percentage of the skin surface. Ablative lasers are the most potent lasers for treatment of acne scars.

## How is fractional ablative laser treatment for acne scars performed?

All acne scar treatment procedures are performed by Dr. Emil Henningsen at our Cutis Clinic in Odense. A strong local anaesthetic cream is applied minimum 1 hour prior to treatment. We offer you painkillers as well (Paracetamol and Ibuprofen). Just before the laser procedure, the cream is wiped off and the skin is disinfected with an antibacterial solution. A computer-guided scanner is placed on the treatment area and the laser is applied. Each laser treatment takes 10 to 20 minutes to perform. After laser, we apply an antibiotic ointment to the treated areas. Cooling is used during and after the procedure to minimize discomfort.

## What kind of acne scars respond to fractional CO2 / Erbium lasers?

In general, skin texture with minor depressed / atrophic scars respond well to fractional ablative laser treatment. In some cases, rolling scars are tethered (anchored) and must be treated with subcision for optimal results. In order to lift scars to the same level, deeper icepeaks and boxcars should be treated with TCA cross before any latter laser treatment.

## How many CO2 / Erbium laser treatments are needed for optimal results?

The number of laser treatments for acne scars depend on your starting point and factors such as the treatment method, the device used, the skill sets of the practitioner, the depth and type of your scars, your healing response, your tolerance to downtime, your skin colour etc. In most cases, 3 to 4 sessions of fractional CO2 / Erbium laser may lead to 60 - 70% improvement. Treatments are spaced with 2-3 month intervals. More treatments may be performed for even better outcomes. Some patients aim for the best possible outcomes and go far beyond this number of laser treatments.

## How do fractional lasers work?

Fractional laser produces thousands of tiny 'ablation' holes in the skin. Each hole is the diameter of a shaft of hair, however these columns extend up to 2 mm into the skin where the scars lie. The laser targets the scarred areas and stiff collagen, but also leaves areas of healthy tissue to regenerate. This fractional treatment allows your skin to heal much quicker than if the entire surface was treated at once.

## How does fully ablative laser resurfacing work?

Erbium and CO2 laser resurfacing is used for the treatment of superficial acne scars that lie in the same level of the skin. We use numbing cream and nerve block (Lidocain injection) for anesthesia - and mild sedation, if needed (extra charge). Most often, we use Erbium resurfacing to remove the upper layer of the skin, usually 200-400 microns depth. As we reach the papillary dermis, some pinpoint bleeding will be seen. This is followed by fractional Erbium or fractional CO2 laser treatment for added effect. Fractional laser creates deep columns of ablation (tissue removal and coagulation) in the deeper dermis.

## Which laser is best for acne scars?

The correct treatment method for your scars will give you the best results - not necessarily a laser. Lasers are only one of the tools used for revision of acne scars. In general, fractional CO2 laser is the most effective laser for scar revision, but the risk of side-effects is a bit higher.

### Different lasers and treatment indications

- Fractional CO2 laser – a very good fractional laser for all grades of textural scars. CO2 laser suits fair (Caucasian) skin types, but may even treat darker skin types (with adjusted settings, lower density). Downtime is controlled by the operator. Your skin will usually heal in 3-6 days.
- Fractional Erbium laser – a very good laser for all grades of textural scars. Suits fair AND darker skin types with less risk of skin darkening (PIH) compared to fractional CO2 laser. The effect on acne scars is almost equal. Your skin will heal in 2 - 4 days.
- Erbium laser resurfacing is very often followed immediately by fractional ablative laser. This is the most effective treatment for skin texture and superficial acne scars at the same level. Downtime varies between 8-10 days. Erbium resurfacing is very safe on Caucasian / fair skin and the risk of pigmentation (PIH) after treatment is higher on dark skin compared to fractional. The risk of infection and new scar formation is higher compared to fractional. Antibiotic tablets are recommended (we will prescribe or deliver these at the initial consultation).
- Pulsed dye laser (PDL) - gold standard laser for red (early) scars. Safe on Caucasian / fair skin, but can also treat type 3 skin types. Darker skin may have treatments with lower setting (fluence). In fair skin, PDL treatment may convert redness to purple spots that will fade in about one week. PDL may be combined with others energy devices such as CO2 or Erbium laser if intense skin remodelling is indicated. PDL is also used after ablative lasers to speed up healing or immediately after radiofrequency microneedling (Genius) for the same purpose.
- Q-switched nano-second laser (QS) - a good laser for pigmented lesions and scars (PIH). Safe on every skin type. Zero downtime. QS is often combined with Hydroquinone cream for home use 2-5 night per week.
- Long-pulsed nd:YAG laser - used for non-ablative skin treatments to reduce inflammation and for gentle remodelling of skin texture and scars on all skin types. No downtime.

Treatment	Downtime (indicative)	Ideal skin type (skin colour)	Scar severity	Projected scar improvement	Costs
CO2 fractional laser	3-7 days	1-3	Mild to severe scarring	++++	DKR 3,000 - 7,000 per treatment

Erbium resurfacing + CO2 fractional	7-10 days	1,2, (3)	Mild to severe scarring at same level	+++++	Cheeks DKR 7,000 - full face 15,000 per treatment
Erbium fractional laser	3-4 days	1-6	Mild to severe scarring	+++	DKR 3,000 - 7,000 per treatment
Pulsed dye laser	7 days	1-3 (4)	Mild to severe, early and red scars	+++	From DKK 2,000 per treatment
Q-switched laser	0-1 day	1-6	Mild to severe hyperpigmented scars	+++	DKR 2,000 per treatment

## How to take care of your skin after laser and RF - post-procedure skin care

After fractional CO2 or Erbium laser treatment, your skin will be red, swollen, oozing, and may pin-point bleed for 1-3 days and then gradually decreases. Discomfort will gradually decrease after 1-2 hours.

### Aftercare for CO2 and Erbium laser resurfacing and RF microneedling

For the first week after each treatment:

- Gently wash your skin at least two times daily using a mild facial cleanser
- Rinse or shower your face, wash your hair with shampoo and conditioner as needed
- Apply generous amounts of Cicalfate cream (Avène) or Cicaplast cream (La Roche-Posay) more times daily. These creams are developed for post-laser skin care.
- Makeup can be used when the skin has healed.
- Keep your skin cool - but not cold. Avoid hot showers and sauna.
- Keep your skin clean. Avoid dust, dirt, and contaminated skin contact
- No picking, let crusts peel off by themselves.

To reduce the risk of skin infection, we may deliver antibiotic tablets (Azithromycin 500 mg) for you. You should take one tablet daily for three days.

If you have a history of recurrent cold sore (herpes labialis), we will deliver you antiviral tablets (Valaciclovir 500 mg). You should take one tablet twice daily for 5 days.

## Potential complications to laser treatment

We strive to achieve optimal results with paramount safety and follow-up. However, there is a risk with any procedure involving energy devices.

When laser treatments are performed by an experienced specialist, complications are very rare.

Potential complications include:

- Infection. Less than 2% of cases.
- Scarring is rare and may follow secondary infection.
- Grids or marks from the laser in the skin is seen in less than 10% of cases, however this is reversible with laser resurfacing.
- Post-inflammatory skin pigmentation changes are uncommon in fair skin, but may be seen in 10% or more of cases in ethnic skin. Bleaching creams (Hydroquinone 5%) used one month before and after laser treatment reduces the risk of skin colour changes in dark patients. Hydroquinone is sold over the counter in some countries. We cannot prescribe HQ abroad, but you could speak to a local dermatologist about a prescription or seek at Amazon.
- Erythema (redness) and swelling is commonly seen after Genius, Erbium and CO2 laser treatments. Redness and swelling gradually fades over 3-4 days following Genius treatment and it takes a few weeks after fractional laser treatment, but some redness may persist for 2-3 months after laser resurfacing.