
Edge ONE™

Treatment Guideline

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INTRODUCTION

It has been 50 years since the Laser came into the world. The first working laser was made by T.H. Maiman using synthetic ruby crystal as its gain medium with Al_2O_3 including small amount of Chromium ion at Hughes Research Laboratories on May 16, 1960. The light of this is called 'Light Amplification by Stimulated Emission of Radiation' and its acronym is LASER.

In 1964, Patel made the first Laser irradiation using CO_2 gas and it has been used for industrial and medical applications widely.

About Edge ONE™ Laser

The advantage of Edge ONE™ is the minimal downtime and few complications after treatment by adapting the Fractional Photothermolysis theory with Micro Beam.

Edge ONE™ has a new concept of CO_2 laser system using 10,600nm wavelength with significant treatment effects and safety by the Fractional Photothermolysis theory.

Since CO_2 laser treatment had been avoided due to long recovery time and high risk of side effects, a new treatment method has been needed to solve those problems. The Edge ONE™ has been developed as a CO_2 Fractional Laser System with multi-treatments availability by applying the Fractional Photothermolysis theory.

INDICATION

Surgical Mode

- Pigmented Lesions such as Mole, Freckles, Blemishes, and/or Age spots
- Wart, Callus, Condyloma
- Osmidrosis axillae
- Rhinitis, Snoring
- Circumcision, Hemorrhoid
- Millium, Callus, Soft fibroma, Syringoma, etc.

Fractional Mode

- Acne Scar, Burn Scar, Hypertrophic Scar, Atrophic Linear Scar, Striae Distensae
- Fine Wrinkles, Skin laxity, Deep Wrinkles
- Large Pore, Uneven-Skin Tone(Pigments, Telangiectasia), Whitening
- Rejuvenation of Neck, Chest and Hands
- Fractional Ablative Skin Resurfacing

Checkout before Procedure

Edge ONE™ is effective for various lesions such as scar, wrinkles, and photo-aging. However, it should be carefully treated for the patients who have the following diseases and/or are taking medicines since it uses laser in order to prevent from any possible side effects.

- Skin allergy to certain medicines or topical anesthesia / steroids
- Opened fresh wound on the area of treatment
- Herpes simplex infection
- Photo-sensitive skin
- Psychoneurosis as alcoholic or drug poisoning
- Diabetes Mellitus, any of connective tissue diseases
- Cardiac pacemaker, defibrillator
- Cancer or any of malignant diseases
- High blood pressure, any of acute diseases

For the above patients, it should be carefully followed up for wound treatment especially till to its recovery for the least happening of side effects. The procedure of wound treatment is similar to the one for first-degree burn. Patients must follow all the matters of indication, included avoiding excessive exposure of skin to the sunlight after laser treatment. Treatment is not recommended for those who do not agreeing with cautions and indications.

Pre-Operation Procedure

1) Cleansing & face washing

Clean and wash face thoroughly to get rid of any remained pollutants and body wastes for both reducing pathogenic bacterium and suppressing pain and infection.

2) Tropical Anesthesia

If it is epidermal lesion, apply anesthetic cream on the treatment area by brush.

To check out if skin is allergic to the cream, apply a small amount on the hidden spot for testing only. It takes from 15 to 40 minutes depending on the type of cream.

If it is dermal or large-sized lesion, apply 1~2% of lidocaine on the normal tissue under the lesions. (If the medical fluid is flown into the lesions, it is necessary to have longer time to irradiate because it reduces laser energy a lot when emitting. When the fluid is infiltrated in the normal tissue that is just below the lesions, it is good for recovery and hardly makes scar by preventing from the damage of normal tissue with water absorption of laser.)

3) Removal of Anesthetic Cream

Wash face by the sponge that has been soaked in a bowl with warm water.

4) Disinfection of treatment area

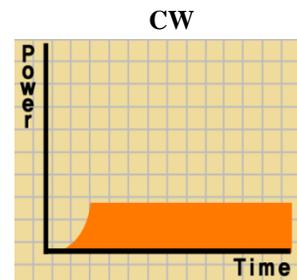
Clean the treatment area with Boric (500ml of Normal Saline + 1 teaspoon of Boric Acid)

Surgical Mode

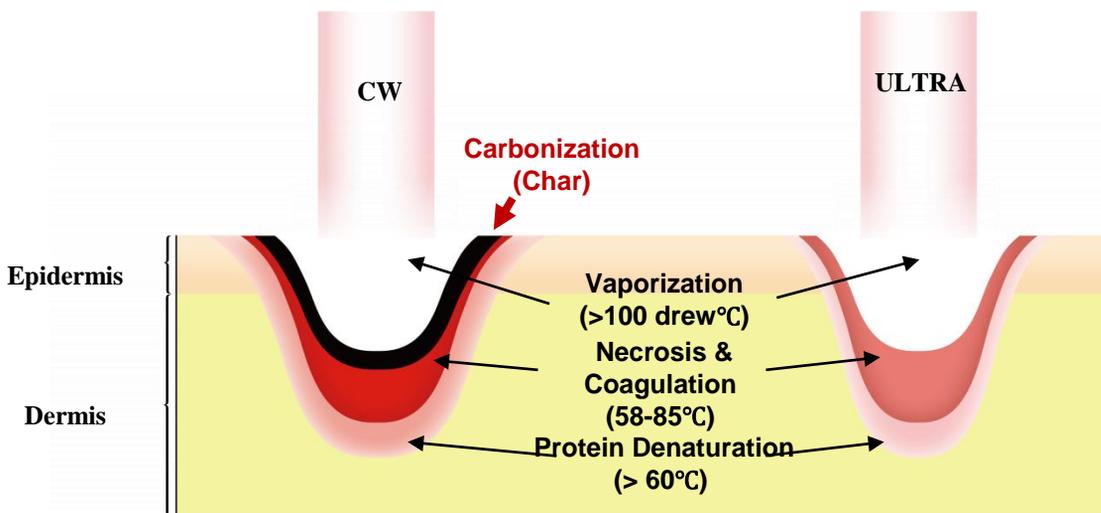
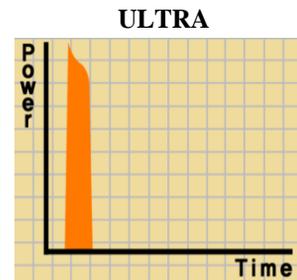
Principle and Application of Surgical Mode

Edge ONE™ is the CO₂ laser system by using 10,600nm wavelength of far infrared ray area. In this wavelength, laser is absorbed more effectively, meaning it is well responded to skin tissue, which has a lot of water inside. When CO₂ laser beam light is irradiated, Vaporization occurs at once on the emitted tissue and part of delivered energy diffuses heat to the surrounding tissues, which causes Coagulation or Protein Denaturation. This theory is the basis of the treatment mode for fine and delicate lesions such as mole, age spot and freckles.

- **CW(continuous wave) Mode:** Laser is continuously irradiated during the foot switch is on. It is good to stop bleeding due to the fact that it gives deep thermal damage to the surrounded treated area.



- **ULTRA Mode:** High Peak Power laser is irradiated during the foot switch is on within the selected Hz. Induced thermal damage is lighter than weak CW mode such as low energy but long irradiating condition due to the conducted heat surrounded treated area is much less.



How to Use Surgical Mode

- ① Set up the parameters through screen (Laser Mode, Power, Pulse Duration, Pulse Delay, Pulses in a Group, Group Interval). *(Ref. Page 10 Treatment Parameter)*
- ② Adjust a guide beam to the anesthetized lesion.
- ③ If the size of area is wider than the laser beam's diameter, move it with scanning and weaving motion rather than continuously irradiated to single spot.
- ④ During the treatment, make sure of the borderline between the lesion and normal tissues by cleansing with saline-soaked gauze occasionally to observe the process of carbonization of the lesions.
- ⑤ If you skip the ④, depth of irradiation can not be figured out and moreover, it is hard to irradiate efficiently since the carbonized tissues block laser beam.
- ⑥ When irradiation is too deeply done, it may destroy part of normal tissues and it causes 'scar' due to failure of tissue healing.
- ⑦ It is necessary to do Scanning promptly and quickly after the lesion is removed from the surface because it helps to recover in a shorter time making eschar of protein flake on the surface.
- ⑧ No need to use a gauze because eschar is naturally removed at the time 1 ~ 2 weeks after treatment.

Surgical Mode Treatment Parameter

- Treatment Parameter should be adjusted by operator's decision along with character, location, depth and skin type of each lesion.

Lesions	Laser Mode	Pulse Duration	Power (Hz)	Remarks
Mole	ULTRA	200 usec	50Hz	❖ Increase or decrease Hz depending on operator's skill. ❖ Increase or decrease 'Pulse Duration' depending on the condition of lesions.
Freckle	ULTRA	100 usec	50Hz	
Blemish	ULTRA	100 usec	50Hz	
Wart	ULTRA	500 usec	70Hz	
Verruca plana	ULTRA	500 – 600 usec	40-70Hz	
Aged spot	ULTRA	100 usec	50Hz	
Soft fibroma	ULTRA	300 usec	50Hz	
Milium	ULTRA	300 usec	30Hz	
Syringoma	ULTRA	300 usec	30Hz	
Callus	CW		2-3W	
Osmidrosis axillae	CW		3-5W	
Condyloma	CW		1-3W	
Rhinitis	CW		5-10W	❖ Tune in the beam to hair roots accurately.
Snoring	CW		5-10W	❖ Increase or decrease Power by different symptoms.
Phimosis	CW		10-15W	❖ Coagulation after cutting by Defocusing.
Hemorrhoid	CW		5-15W	

Treatment Response to Surgical Mode

- **Pain**
 - It is possible to treat without anesthesia since it is hardly painful when it is topical area.
 - If patient appeals of pain, apply anesthetic cream on the area of treatment. It also is helpful to take cold pack on the area.

- **Erythema & Edema**
 - Erythema stays for 1 ~ 3 days and disappears gradually within 1 week.
 - It should be advised to call the clinic right away in case of redness is remained strongly and especially it feels burning and sore even after returning home and if blistered.
 - Even if the response to the treatment is quite strong, it does not harm for any of good results when it is properly managed from the early recovery time. It is necessary to take cold pack and apply ointment.
 - In case of using high energy at treatment, additional wet-dressing is good for supplying more water makes wound healing and skin protection.
 - Wet-dressing is useful for the eschar as well.
 - Enough supply of water promote the process of wound healing and reduce PIH occurrence.

- **Secretion of Serum**
 - In some cases of treating wider or deeper lesions, there could be exudation and Pinpoint Bleeding partly.
 - This means laser beam penetrates deeply enough to the dermis and it is normal response. Patient should be advised of this response before treatment for not being embarrassed once he/she had it. No special care needed for Pinpoint Bleeding since it naturally will be coagulated within 1 hour.

- **Eschar**
 - Eschar would be appeared about 2~3 days after treatment. It could be longer depending on the lesion's size or depth and will be fallen off naturally. If it is removed by force, it may cause pigmentation on the area.
 - In case of mole treatment, there could be a tiny hole after eschar's removal.
 - To prevent from the pigmentation by UV exposure, be sure to apply sun-blocking cream on the area before going out.
 - The mole may not be perfectly removed if its root is deep, and it is possible to re-treat at the time 1~2 months after.

Post Treatment Care

The response could be different depending on the pulse energy and spot density of each treatment. The treated area becomes white tiny hole generally after CO₂ Laser treatment.

- Make sure that the treated area is not exposed to water after mole removal for 2 – 3 days.
- Apply steroid ointment on the area of mole removal until its eschar naturally falls off.
- It is recommended to avoid to go to public bath or sauna, and do strenuous exercise or swimming for 7 days.
- Do not scratch the treated area when it is itchy.
- It is normal that there is a little hole on the treated area after eschar's removal.
- The hole will not be trouble long because it will be filled by granulation soon.
- Make sure to apply sun blocking cream before going out to prevent from the pigmentation by UV exposure after eschar's removal.
- The mole may not be perfectly removed if its root is deep, and it is possible to re-treat at the time 1~2 months after.

Fractional Mode

Principle and Application of Fractional Mode

Fractional Mode is designed to cause a slight thermal damage into skin tissue by the irradiation of hundreds of fine laser beam of CO₂ Laser. It makes minute holes that goes through dermis deeply enough giving damages very little with a tiny diameter ensuring quick recovery. Once laser beam is irradiated, the area's fibroblast growth is increasing, collagen regeneration is enhanced and stem cell proliferation is promoted. The skin regeneration becomes more active by the influence of undamaged surrounding cells.

Treatment by Fractional Mode is effective for scar, wrinkles, photo-aging skin, uneven skin tone, and rejuvenation.

TIPS(5 kinds of tips)

	120S	120	350	800	Surgical Tip
Tip Type					
Beam Size	120um	120um	350um	800um	120
Scan Area	2X2mm-10X10mm	2X2mm - 15X15mm			Single beam
Scan size	Scan size of 120 um is smaller than 350 um and 800 um in same scan area.				
Features	Density setting Range: 0.3 ~ 28.3%	Density setting Range: 0.3 ~ 28.3%	Density setting Range: 0 ~ 42.4%	Density setting Range: 0 ~ 24.6%	

Fractional Mode Treatment Parameter

Indication		Beam size (um)	Peak Power (Watt)	Pulse Energy (mJ)	Total Density (spots/cm ²)
Skin Rejuvenation	Large Pore & Fine Wrinkles (Periorbital)	120	20	10-30	150-200
	Skin Laxity Deep Wrinkles	120	20	20-30	150-200
	Uneven Skin Tone (Pigments, Telangiectasia)	120	30	10	200-300
	Off-Face (Neck, Chest, Hands)	120	30	10-20	100
Scar	Acne Scar	350	30	20-50	50-200
	Burn Scar	350	30	30-60	50
	Hypertrophic Scar, Keloid	120	30	10	200
	Atrophic Linear Scar	120	30	20-30	200-300
	Striae Distensae	120	30	20-40	200-300
Fractional Ablative Skin Resurfacing		800	30	More than 60	20~100 Coverage

Indication		Beam size (um)	Peak Power (Watt)	Pulse Energy (mJ)	Total Density (spots/cm ²)	Pass
Skin Rejuvenation	Large Pore	120	Edge Pulse	3.6-5.4	100-144	1
	Skin Laxity Fine Wrinkles	350	30	14-18	81-100	1
	Skin Tone (Whitening)	350	30	6-10	100-121	1
	Off-Face (Neck, Chest, Hands)	350	30	6	100	1
Scar	Acne Scar	120	30	22-26	100	1-2
		350	Edge Pulse	7.2-9	100	1-2
	Scars	120	30	26-35	100-144	1-2

Treatment Response to Fractional Mode

- **Erythema & Edema**
 - In case of using high energy at treatment, additional wet-dressing is good for supplying more water and it makes wound healing and skin protection.
 - Wet-dressing is useful for the eschar as well.
 - Enough supply of water promote the process of wound healing and reduce PIH occurrence.

- **Secretion of Serum**
 - It comes with microhaemorrhage.
 - Compress by sterilized dry gauze.

- **Microhaemorrhage**
 - It occurs at the energy used 20mJ and more generally.
 - Compress by sterilized dry gauze softly.
Some of patients could bleed within 24 hours after treatment.
 - Because young and thin skin has more capillaries in the skin, it occurs to these skin type than older and thicker ones.
 - Angioedema and Microhaemorrhage would be remarkably reduced by compression. However, it should be observed for 2 hours more if there is any more bleeding.

- **Feeling of burn**
 - When use ice-pack, it should be wrapped by sterilized dry gauze to protect the treated area from direct touch of water.

- **Infection & Inflammation**
 - Since its beam size is small, Fractional Mode treatment does not cause infection and inflammation much. However, it should be aware of that some patients still could have been infected.
 - After checking if patient had any medical history of allergic response to steroid ointment, apply the ointment to the treated area for preventing from the possible infection.
 - Hydrocortisone and the other steroid medicine can be applied for infection treatment.
1% Hydrocortisone : Be aware of that steroid could cause allergy to some of patients.
For those patients, use only 1% of hydrocortisone and be careful to do not use it more than 7 days.

Useful Tips for Fractional Mode Treatment

- When makes total density high at treatment, repeat Pass. The first treatment is finished by 1 ~ 2 times of Pass on an average.
- Total Density should be more than 200 spots/cm² at the low pulse energy used and the more attention should be paid to PIH when treat the wide area.
- It is expected to have more natural feathering effect when use Stamp Mode for the lesions basically and finish by Moving Mode for the surrounding area.
(When Moving Mode is used for finishing, use the energy 30mJ lower than the one that is used during Stamp Mode.)
- When treating area is wide, select the biggest Scan Area to treat first and then reduce it (e.g. 4*4mm) for the more curved area such as nose and crow's feet. When Stamp Mode is used, be careful to do not overlap the borderline between each Scan Area.
- When use high energy at treatment, it is recommended to use hydrophilic gel dressing such as Bio-skin for 1-2 days for PIH prevention and regeneration of skin.

Treatment Session Interval

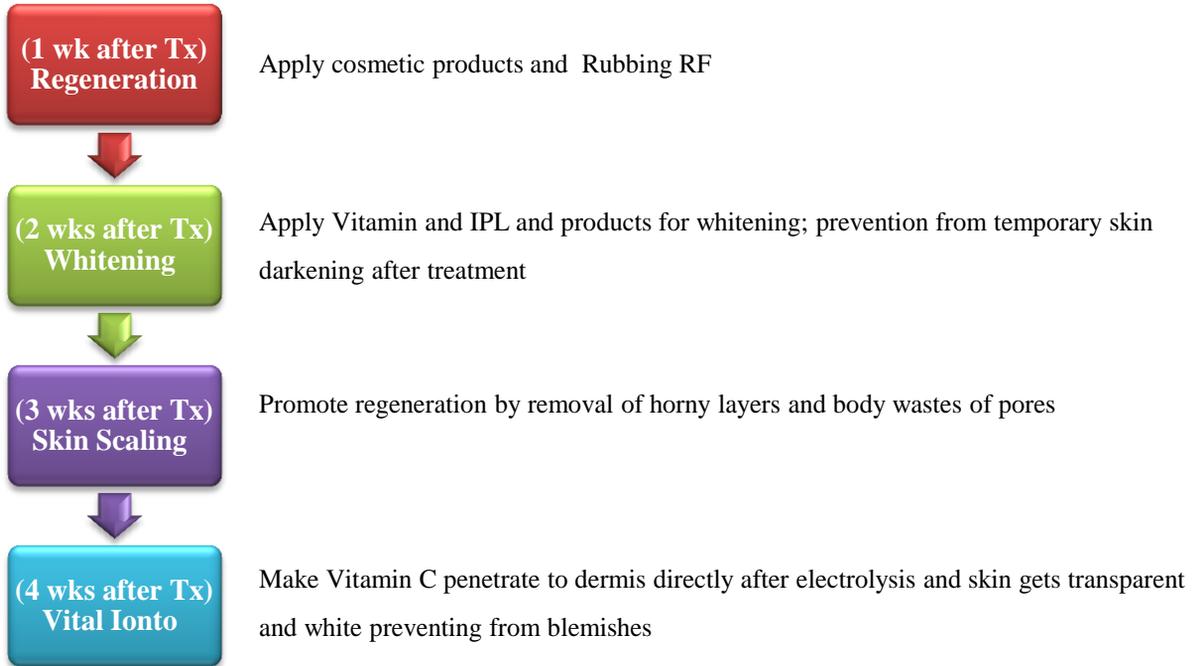
- **Recommended session interval of Edge ONE™ is 4 weeks.**
: It could be adjusted by the used energy, the result of skin response, and judgment by the operator.
- **The good result might be achieved by only 1 time treatment in some cases but we recommend 3 times treatment in a period for more reliable effects.**
: The times of treatment are decided by the types of skin and lesion.
- **After the 3rd session, 2-3 months of interval for next session is recommended for maintenance.**
: It depends on diagnosis from the doctor.

Post Treatment Care

- Do not wash face on the day of treatment. When washing, be careful to do not irritate skin excessively since it could make unwanted exfoliation.
- Face wash and make-up are possible from the next day of the treatment.
- Apply hydrocortisone for 3 days if redness and swelling are serious.
- Skin could be drier temporarily due to treatment. Relieve redness by enhancing natural healing process supplying enough water with Mask Pack or moisturizing cream.
- The treated area's skin tone may be darker and brown for 2-3 days after treatment. In fact, this is a good signal of skin regeneration.
- Eschar gradually will be taken off from the skin within 3-7 days after treatment. Never remove it by force and wash face softly for not removing eschar too early.
- Make sure to apply UV blocking cream (SPF 30 and more) to protect the treated area from intense sunlight. When doing outdoor activity, protect skin by umbrella or cap.
- Do not use any of exfoliation and scrubbing products until eschar's removal.
- It is recommended to not use any cosmetic products with alcohol as ingredient for 2 weeks after treatment and avoid doing anything makes skin hot such as hard exercise, drinking alcohol, taking sauna or spa.

Additional Treatments for Skin Regeneration

EDGE ONE™ Additional skin care is necessary for quick recovery and skin regeneration.



Home Care

- Apply moisturizing cream and dermal caring cream every 3 hours for not making skin dry.
- Use oil-free sunscreen product and its SPF should be 30 ~ 50, PA ++. Apply it every 3 hours outside and 3 times a day inside.
- It is recommended to take Vitamin C products 3 times a day for helping regeneration and preventing from pigmentation. Powdered type is better than pill type.
- Cosmetic whitening products should be applied minimum before sleeping because skin can be exfoliated or damaged if its amount is excessive. When it is applied during night time, sun blocking cream should be applied on the next day due to its sensitivity against to UV.
- It is strongly recommended to do cold pack until feeling of face burn is disappeared after treatment. Even though there is almost no feeling, still recommend to do it for preventing unnecessary side effects.