Combination Care for Acne scars

Written by HWANG Y.H M.D

Speech in Korean Aesthetics Surgery and Laser Society

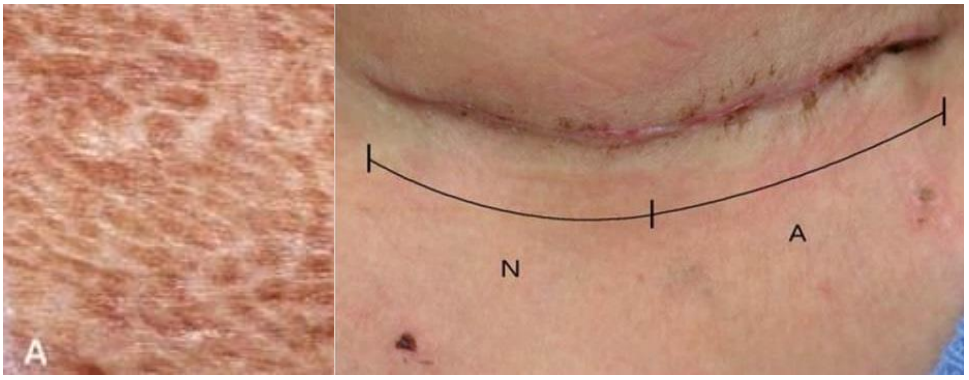
One of the most frequently performed procedures in clinical practice is scar treatment. Scars can occur for a variety of reasons.

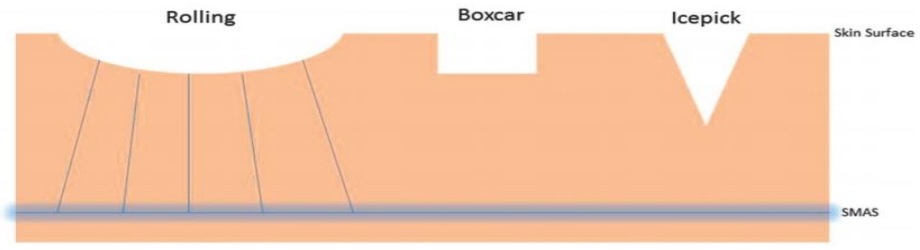
Treatment of these scars depends on the cause of the scar, the elapsed time, and the shape and color of the scar.

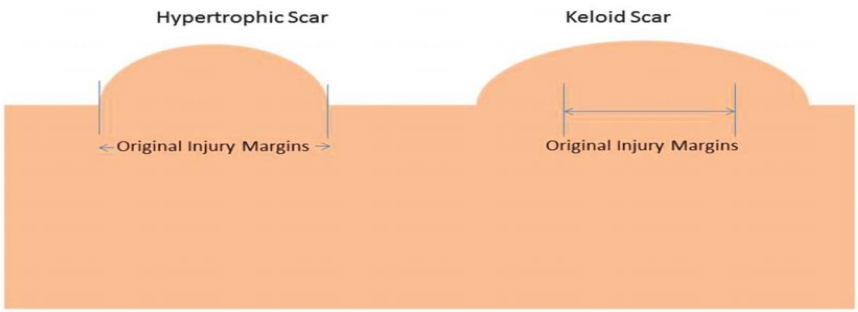
The treatment method will be different. In this issue, I have briefly summarized the treatment of acne scars mainly.

1. Causes and classification of scarring

Caused by acne, burns, surgery, or post-traumatic injuries It is characterized by an irregular arrangement of dermal collagen. Scars can be identified by shape and color.







Morphology of Scars	Color of Scars
① Atrophic Scar - icepick, boxcar, rolling scars ② Hypertrophic / Keloidal Scar	① Erythematous ② Hyperpigmented ③ Hypopigmented

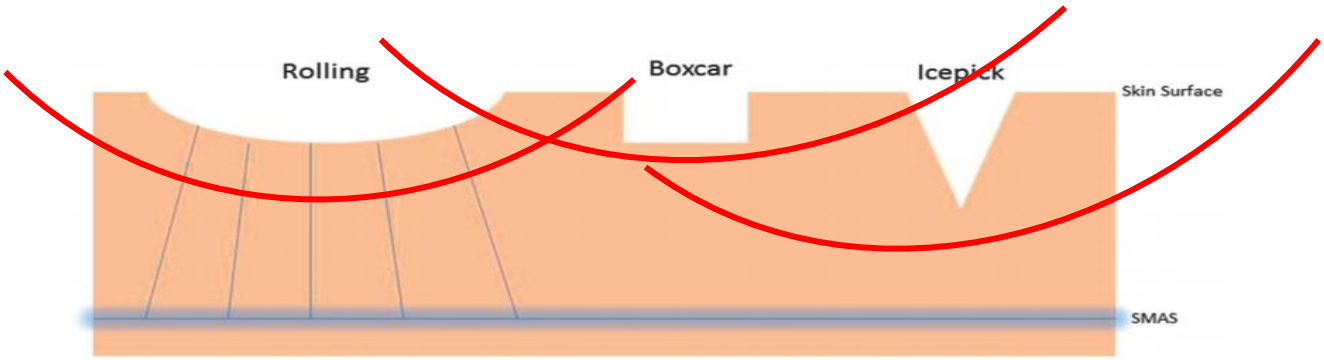
2. scars Treatment

① Laser Resurfacing – CO2, Er:Yag Laser
② Fractional Laser-Ablative / Non-Ablative Laser
③ CROSS (Chemical Reconstruction Of Skin Scar) - TCA Dot Peeling
④ Subcision / Subcision + Filler
⑤ RF Needle
⑥ MTS, Filler, PDRN, TA ILI, Punch, Excision

The basic principle of many treatments is simple.

1. Artificial Wound -> Wound Healing Process Induction -> Collagen Synthesis and Remodeling -> Scar Repair
2. Filling the scarred skin with other methods to level the skin

Specifically, looking at each method, Laser Peeling (Laser Resurfacing – CO2, Er:Yag Laser) The scar area and the marginal skin are peeled using a laser. It is a method of gently shaping the edges of scars or irregular areas. Collagen synthesis at the treatment site is increased to repair scars and increase skin elasticity.



[① Laser Peeling (Laser Resurfacing – CO2, Er:Yag Laser)]

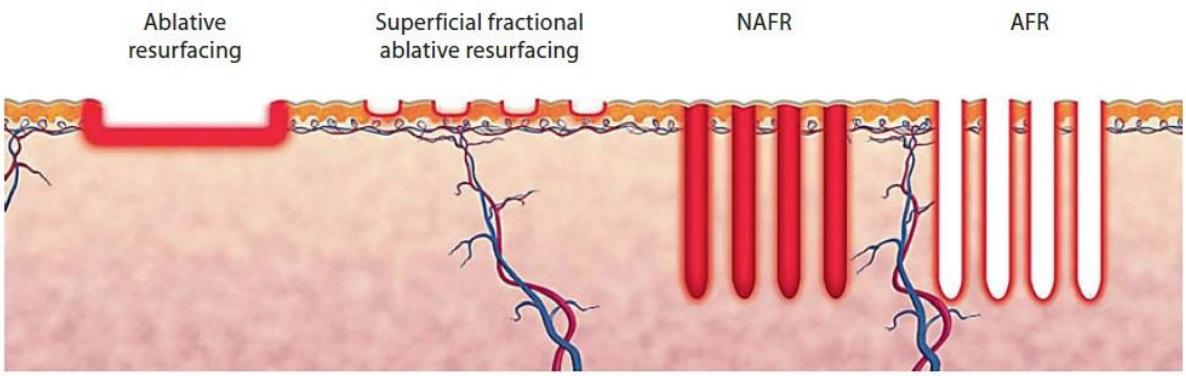


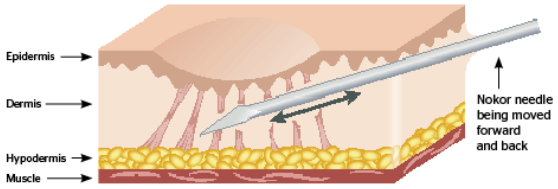
Fig. 4. Patterns of tissue damage. Courtesy of Palomar Medical. NAFR = Non-ablative fractional resurfacing; AFR = ablative fractional resurfacing.

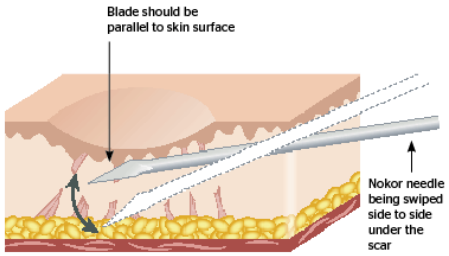
[② Fractional Laser]

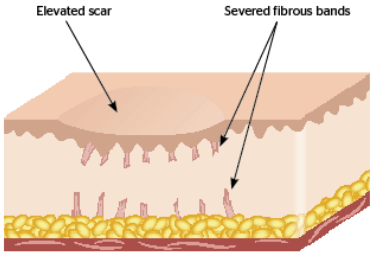
Although it is a method that partially exfoliates the skin, it is less effective than laser resurfacing. It has the advantages of fast healing after the procedure and few side effects. It can be divided into dermabrasion / non-dermabrasion, and the effect increases when repeated treatment is performed. After several months of treatment, collagen remodeling of the dermis occurs.

[③ CROSS(Chemical Reconstruction Of Skin Scar)]

It is mainly used to treat deep icepick scars and boxcar scars using 70-100% TCA. Apply TCA to a sharp wooden toothpick or a needle of 30G or less and puncture the scar. High concentrations of TCA induce coagulative necrosis in the skin. As a result, a wound healing process occurs and collagen production is increased to repair the scar. As side effects of TCA therapy, dyschromia, erythema, scarring, and atrophy may occur. In patients with dark skin, PIH may be severe.







[④ Subcision]

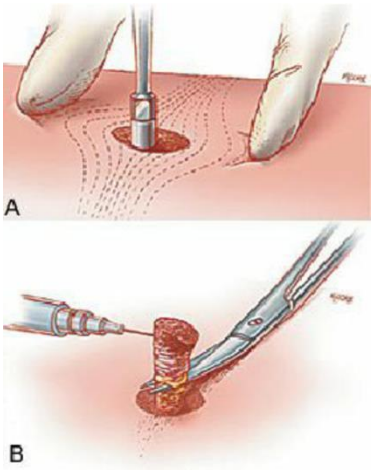
A procedure to cut subdermal fibrous bands in the skin using an 18~21G needle It is mainly used for rolling scars and shallow boxcar scars. After the procedure, a formed blood clot is formed due to subdermal bleeding, and a large amount of new collagen is produced, raising the skin in the scar area.

[⑤ RF Needle]

It is a method to improve scars and pores by inducing heat damage to the dermis with high frequency. It is also effective in treating acne by reducing sebum secretion. It is very effective in improving skin elasticity and treating fine wrinkles, so it is often used for treatment of fine wrinkles on the neck or face.

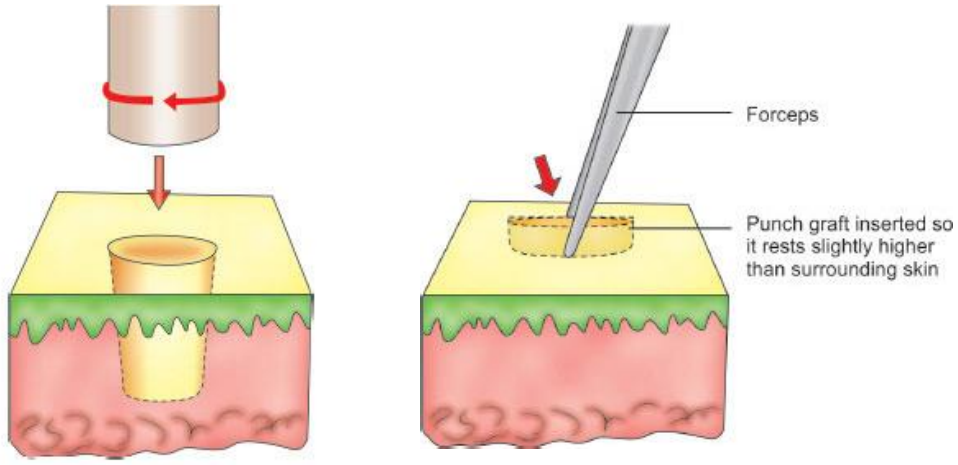
[⑥ Filler, PDRN Injection]

After subcision, filler and PDRN are injected to fill the dented scar area. Fillers of Hyaluronic Acid, Calcium Hydroxyapatite, Poly-L-Lactic Acid, and Polymethylmethacrylate are mainly used. It has the effect of increasing the volume of the scar area, promoting collagen production, and improving skin texture. PDRN increases collagen production in the treated area.



[⑦ Punch Excision]

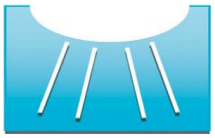
It is a method of removing subcutaneous fat using a punch and suture. The scar should be at least 4 to 5 mm apart so that side effects do not occur. Procedures should be performed at least 4 weeks apart, and if an additional resurfacing procedure is required for the treated area, it should be performed 4 to 6 weeks after punch excision. For scars larger than 3.5 mm - punch elevation is recommended.



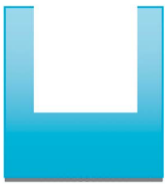
[⑧ Punch Elevation]

This procedure is a combination of punch excision and grafting. It is mainly used for Shallw and deep boxcar scars. After punch excision of the scar area, sutures are performed according to the height of the surrounding skin.

A summary of suitable treatments for acne scars

1. Icepick scars	2. Rolling Scar
	
Features: The size is <2 mm, narrow and narrow. It gets sharper towards the dermis.	Feature: Size 4-5 mm, Sloped and shallow borders, gentle dents due to dermal tethering.
Pnch excision +++ TCA CROSS ++ Radiofrequency + Laser skin resurfacing +	Subcision +++ Fillers +++ Dermabrasion ++ Microneedling ++ Radiofrequency ++ Laser skin resurfacing ++

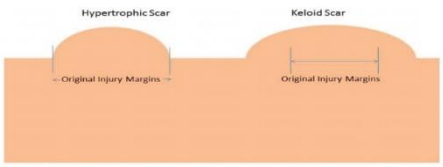
3. Boxcar



Feature: Size 1.5–4 mm, Round to oval depressions with sharply demarcated vertical edges, shallow (0.1-0.5 mm) deep (>0.5mm)

Punch elevation +++ Dermabrasion++ Microneedling ++ Radiofrequency ++ Laser skin resurfacing ++	Subcision ++ TCA CROSS ++ Punch excision/ elevation++ Laser skin resurfacing ++

4. Hypertrophic & Keloidal Scars



Feature - excess collagen deposition and remain within the borders of the original injury
Keloidal scars, thick bundles of hyalinized acellular collagen and proliferate beyond the borders of the original injury

TA Injection/ 5-FU Injection
Non- Ablative Fractional Laser
Erytematous – Pulsed Dye Laser

3. Recommend Effective 2 treatments

There are many different methods, but after trying many procedures over a long period of time and going through trial and error, you will find that the appropriate treatment for each patient is different. Even with the same procedure, results and satisfaction vary from patient to patient. In addition, if the cycle of the procedure is set incorrectly and the procedure is performed, the scar may get worse and cause serious pigmentation.

I would like to conclude this article by introducing two safe and effective procedures.

CO2 Fractional Laser (SNJ)

The most widely used procedure for scar treatment is fractional resurfacing using CO2 fractional laser. It has the advantage of faster recovery and fewer side effects than resurfacing, which cuts the skin overall. What is important is the energy setting of the Co2 Fractional Laser. If the output is set incorrectly, the effect of the procedure is not good, so it is important to find the optimal output by repeatedly performing the procedure with various energy settings. In my case, when treating scars with CO2 Fractional laser, it was most effective to treat with energy where a little bit of Dermal Oozing was observed. In the paper “The Use of CO2 Fractional Photothermolysis for the Treatment of Burn Scars”, there is information that dermal bleeding is noted from more than 50% of columns in the treatment of burn scars.

They claim that it is effective to treat scars caused by burns only when the energy value can penetrate the skin to a depth of about 4mm. Although this high-power procedure can be done without burden on the trunk or upper and lower limbs, When performing the treatment on the face with acne scars, it is better to lower the energy value because high power must be taken care of. The cycle of the procedure is repeated with a cycle of 4 weeks or more. At the next visit to the hospital, the energy level is gradually increased, and the effect of treatment and the occurrence of side effects are carefully observed.

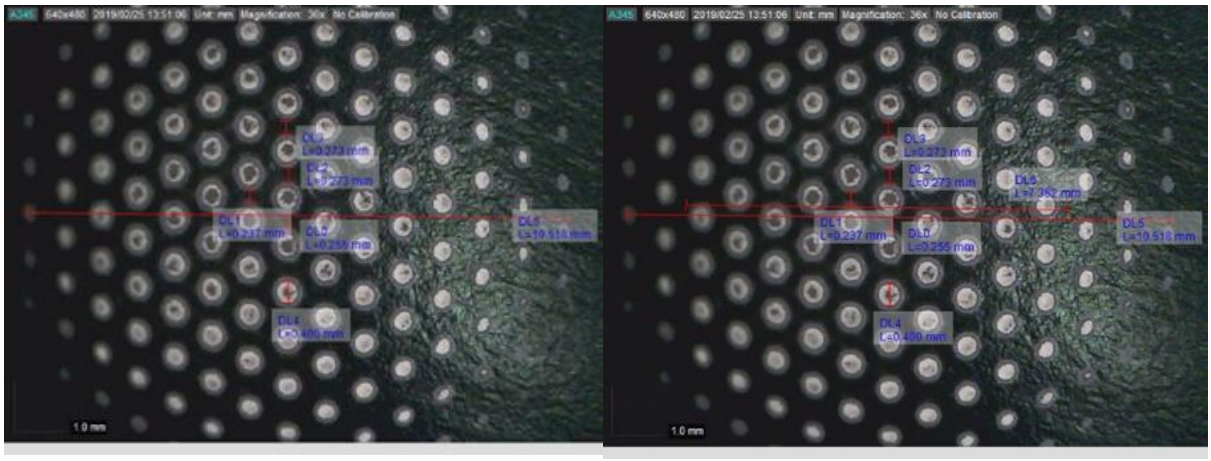
In order to perform a procedure with satisfactory results, it is necessary to have good equipment. I am using SNJ's Fractional CO2. SNJ's CO2 realizes High Peak Power, so its price-performance ratio is very good. The quality of the laser beam is excellent, and even in experiments using thick paper or pig skin, it achieves superior and stable performance compared to other equipment. This equipment is the main equipment for my acne scar treatment.

After CO2 Fractional Laser treatment, you should always pay attention to the occurrence of PIH (Post Inflammatory Hyperpigmentation). After treatment, a small amount of steroids is applied for 2-3 days after the procedure, and the whitening mask pack (Lucent Whitening Mask) released by SNJ is used for 7 days after treatment. In this way, it was possible to dramatically reduce the incidence of PIH after the procedure.

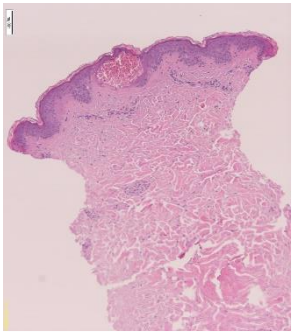
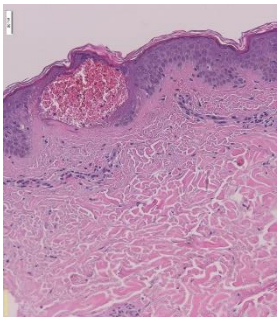
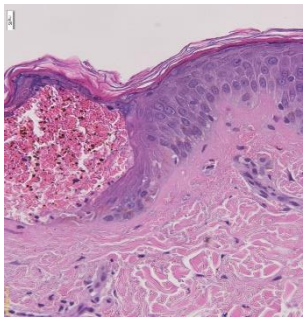
Finebeam(Q-Switched Nd:Yag Laser) Fractional Tx.

Laser Induced Thermal Breakdown (LITB) occurs when the recently released Fine Beam of SNJ is irradiated on the scar using MLA Hand Piece. It corresponds to a Non-Ablative

Fractional Laser in nature, and is effective in treating pigmentation such as melasma, and is also effective in treating acne scars, large pores, and fine lines. The Fine Beam laser is designed as a Two Chambers Laser Head to realize both Q-Switch & Long pulsed 1064 nm. The output is good and stable enough that it does not disappoint expectations.



The beam coming out of the MLA hand piece has 100 effective spots out of 140 spots, and the spacing between the spots is about 0.25~0.3mm, so the density of output is excellent and there are few side effects during treatment.

		
X100	**X200**	**X300**
Thermal damage of the dermis (Laser Induced Breakdown) is seen without damage to the epidermis		

[14 days after one treatment]

After one treatment, there is an effect of reducing pores, but the improvement of skin tone becomes clear. MLA hand piece treatment is also effective for pigmentation disorders. It can be used for dark spots and various pigmented lesions in the epidermis
In the case of freckle treatment, the effect of treatment is good if it is combined with a 2 pass treatment as if toning with weak energy (300~400mj). In the case of scar treatment, increase the output to the treated area (800~1000mj) at a cycle of 4 weeks or more and perform 2~3 passes. One thing to be aware of is that patients sometimes complain of severe itching after the procedure due to the high output. And petechiae sometimes occur in areas with thin skin, so you need to be careful with PIH.

---

4. Conclusion

In the treatment of scars, several methods must be combined and treated effectively. It is necessary to carefully treat scars that are difficult to treat using specialized treatment methods according to various scars. Since scar treatment is time-consuming and costly, patients are not satisfied with it, and complaints may occur frequently. Therefore, it is advisable to fully explain to the patients and obtain their consent before the procedure. It is also important to educate patients so that they can manage well after the procedure, because scars can get worse by touching the well-treated area with your hands or improper management. Antiviral drugs, antihistamines, and antibiotics are prescribed in advance for 3 days in consideration of possible side effects such as herpes virus, bacterial infection, pruritus, erythema, PIH, etc. It is better to ask for a visit to prevent possible side effects in advance.

Reference

1. A Review and Update of Treatment Options Using the Acne Scar Classification System Monica Boen, MD* and Carolyn Jacob, MD. Dermatol Surg 2019

2. Ablative Fractional CO2 Laser for Facial Atrophic Acne Scars Yaqin Xu, MMed1 Yunhua Deng, MD

3. Laser treatment for facial acne scars: A review Neil S. Sadick & Andrea Cardona

4. Treatment of Facial Burn Scars With CO2 Laser Resurfacing and Thin Skin Grafting Celalettin Sever, MD, Fatih Uygur, MD, Yalcin Kulahci, MD, Sinan Oksuz, MD, Cihan Sahin, MD, and Fuat Yuksel, MD

5. Comparison of the effectiveness of nonablative fractional laser versus ablative fractional laser in thyroidectomy scar prevention: A pilot study Hei Sung Kim, Ji Hae Lee, Young Min Park, Jun Young Lee. Journal of Cosmetic and Laser Therapy, 2012