

Fractionated Sublative Radiofrequency in the Skin of Colour: 4 years of Indian Perspective

Dr. Shaunak Patel, MD

Dermatology, President, Society of Aesthetic Advancements India (SAAI)

*Corresponding author

Dr. Shaunak Patel, MD, Dermatology, 5-Raghuvansh Flats, Next to Monarch Building, Jagjivan Park Society, OPP. AUDA Garden, Ishwar Bhuvan, Navrangpura-380014, Ahmedabad, Gujarat, India; Cell: +919837250850; E-mail: threadliftindia@yahoo.com; shaunakpatelmbbs@yahoo.co.in

Submitted: 02 Sep 2018; Accepted: 10 Sep 2018; Published: 28 Sep 2018

Abstract

This article will shed light on the theoretical and methodological perspective on the issue of the superiority of newer sublative fractional radiofrequency device over to older and less tunable technology. In depth analysis of advantages and scope of application of the technology is the aim behind authoring this review.

Introduction

Sublative Radiofrequency Resurfacing has been around for a few years now. Limited studies were conducted on the skin of color which made it difficult to replicate the results in a regular clinic scenario. What caught my interest was the flexibility of application and the ability to deliver the energy in a Fractionated manner. Constant inventions have made it possible to extend the horizon of its applications and popularize its use in the global market for energy based rejuvenation devices [1-4].

Discussion

There has been a paradigm shift in the concept of energy based devices over the last couple of decades. More emphasis has been given to “safety” as opposed to the “total power” which is being replaced by “actual usable power output delivery” for all practical purposes. In these “Downtime Centric” treatment scenarios, I observe that people now prefer multiple sittings as opposed to fewer sittings with significant downtime.

The machine I am using is Duet RF (Eun Sung Global Corporation, South Korea). The aforesaid technology of Sublative Fractional Radiofrequency Resurfacing has been successfully employed by me in the treatment of large pores, oily skin, wrinkles, acne scars, texture and stretch marks [5]. This multi-modal application of the technology has helped me to rediscover and find newer and safer ways of using it.

Unlike a laser, the Radiofrequency does not have a target chromophore and can be used with a greater degree of safety and flexibility in the skin of color. The very notion of a “Colorblind Machine” helps to get past the most common and dreaded side effect of “Post-Inflammatory Hyperpigmentation” occurring frequently with contemporary technologies like a fractionated CO₂ laser [5].

If I were to grade the skin conditions in the ascending order of the power band of treatment, it would be as follows – large pores < wrinkles < laxity < scars ; pores needing a minimal energy and scars needing a deeper maximal energy approach. This is however only after clinically stabilizing the ongoing dermato-pathological processes.

Clearly there is a “Spatial” and a “Depth” related phenomenon that needs a careful understanding. It is imperative to say there is a “tunable balance” between ablation and coagulation/necrosis. This multi-factorial approach needs to be understood individually [6].

Fluence or Energy Density was the single most important factor for many years. New working dynamics came to existence. A directly proportional relationship existed. But with the introduction of different treatment tip sizes and the fractional technology, the relation became more precise, predictable and controllable. For example now it was possible to deliver huge energy at just the epidermal level for resurfacing without much deeper dermal interference and vice-versa [6,7].

Lesser the distance between the electrode tips, the more superficial is the level of power delivery. Meaning to say, a 196 pin tip has a superficial level as opposed to a 64 pin tip, keeping the other parameters constant. The energy density translated as tissue dispersion equal to half the distance of individual electrode pins.

The concept of pulse width as used in tunable lasers was applied with a similar advantage. This was of particular help in scenarios where a “sustained” bulk heating was needed without much drop in the peak power output as for example in skin tightening.

The fractional delivery of power brought alongside an understanding of multiple passes during a procedure. This was of use in stacking

power in a tight space without compromising on safety. Acne scars found a useful application in this regard. More passes meant lesser comfort for the patient in addition to higher fluences, as was the case earlier. The heat transfer was now more predictable and this led to happier patients and a rapid increase in the “lunch-time” or “office” procedures.

The problem of large pores is predominantly more in the tropics for men and women alike. I recommend a 100 pin tip size with an effective 300 to 450 microns of tissue involvement. Keeping total passes to 2 with a 5% overlap would ensure a most comfortable experience to the patient.

For acne scars I use Goodman & Baron Global Qualitative Acne Scar Grading System.

For superficial scars keep the pass count to a minimum with no overlap and high RF power to maximize the results. Deeper scars require an isometric delivery of power hence a lesser pin count is used in such cases. High RF fluencies with up to 30-40% overlap are important. If a choice has to be made between the percent overlap and pulse width, definitely a scenario with a lesser overlap and a sustained energy delivery is preferred for safety and comfort of the patient.

The unique possibility of a multi-layered approach of power delivery to atrophic scars, chicken pox scars and various other superficial scars with Sublative Radiofrequency is superior as compared to Micro-Needling Radiofrequency just for the simple fact of lesser downtime and low consumable cost. With that said let me point out to another advantage of re-usable tips as opposed to disposable micro-needling tips (of preset shot count) in developing countries like India where import duties are high and the cost of consumables is a direct threat to patient compliance [8]. The critics might argue that the micro-needling RF With can be used for micro-needling only as a part of MCA (Multi-Trepannic Collagen Actuation) Scar Therapy aka Dry Tattooing; but it translates to an increased consumable cost which sometimes is a deal breaker specially when we are looking at multiple sittings and cheaper alternatives for the same [8].

Limitation

It appears that Fractional Radiofrequency Devices are a safe, tolerable, and effective modality for acne scars, skin laxity and wrinkle reduction. The most common side effects are erythema and edema, which are transient, and patient discomfort does not seem to be a deterring factor. A topical anesthetic cream may be used before the treatment to minimize pain. Studies suggest that Sublative Radiofrequency is inferior to the criterion standard for rhytid reduction, the surgical facelift, but is associated with less downtime and fewer side effects [9].

Author's Perspective

The Sublative radiofrequency has been well accepted across the world for skin tightening, fat burning and other similar aesthetic procedures [9]. With the advent of sublative technology, it is now possible to target the surface etiologies in a safer way without compromising the end result. An additional advantage of using such a machine is deeper dermal heating and remodulation [7].

My views about a Power Vs Precision outlook is justified in the modern day “Downtime Centric” scenario of energy based aesthetic

devices. The power if applied too much defeats the whole purpose. With the fractionation of power, the power delivery becomes safer and more predictable [9]. As with other energy based devices, the topic of Side-effect Vs Result outcome greatly depends on operator expertise.

In my aesthetic practice today, I see more people who want combination treatments for better and faster results. The fractional radiofrequency technology is applied with a combination of treatments like Platelet Rich Plasma (PRP), Mesotherapy, and Topical Neutraceuticals to maximize the results [4]. The downtime on these treatments is much less in comparison to the older generation of more energy intense & lesser tunable energy based devices. Power is a multi-factorial phenomenon in the aforementioned technology and understanding every aspect and weighing it against the predictive outcome holds the key to a successful treatment and happy patients [9].

References

1. Manstein D, Herron GS, Sink RK, Tanner H, Anderson RR (2004) Fractional photothermolysis: a new concept for cutaneous remodeling using microscopic patterns of thermal injury. *Lasers Surg Med* 34:426-438.
2. Chantes A, Antoniou A, Leontaridou I (2014) Clinical improvement of striae distensae in Korean patients using a combination of fractionated microneedle radiofrequency and fractional carbon dioxide laser. *Dermatol Surg* 40: 699.
3. Lolis MS, Goldberg DJ (2012) Radiofrequency in Cosmetic Dermatology: A Review: *Dermatol Surg* 38: 1765-1776.
4. Suh D-H, Lee S-J, Lee J-H, Kim HJ, Shin MK, et al. (2012) Treatment of striae distensae combined enhanced penetration platelet-rich plasma and ultrasound after plasma fractional radiofrequency. *J Cosmet Laser Ther* 14: 272-276.
5. Brightman L, Goldman MP, Taub AF (2009) Sublative rejuvenation: experience with a new fractional radiofrequency system for skin rejuvenation and repair. *J Drugs Dermatol* 8: S09-S13.
6. Alexiades - Armenakas MR, Dover JS, Arndt KA (2008) the spectrum of laser skin resurfacing: Nonsablative, fractional, and sublative laser resurfacing. *J Am Acad Dermatol* 58: 719-737.
7. Amy Forman Taub, MD, Cara Beth Garretson, MD Treatment of Acne Scars of Skin Types II to V by Sublative Fractional Bipolar Radiofrequency and Bipolar Radiofrequency Combined with Diode Laser, *J Clin Aesthet Dermatol* 4: 18-27.
8. Ramesh M, Gopal M, Kumar S, Talwar A (2010) Novel Technology in the Treatment of Acne Scars: the Matrix-tunable Radiofrequency Technology. *J Cutan Aesthet Surg* 3: 97-101.
9. Lolis MS, Goldberg DJ (2012) Radiofrequency in Cosmetic Dermatology: A Review: *Dermatol Surg* 38: 1765-1776.

Copyright: ©2018 Shaunak Patel. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.