

WHITE PAPER

SmartXide²

IV Generation Resurfacing

DEKA

The Code of Excellence

IV Generation Resurfacing

Raffaele Greco, MD PhD
Caltagirone (CT) - Italy

Skin resurfacing is still the gold standard for facial rejuvenation in patients suffering from chronic pathologies such as wrinkles due to chronoaging, post-acne scars, accident scars and pathologies that have a high incidence on the population and for which the number of treatments is constantly increasing.

Introduction

"IV Generation Resurfacing" is a new combined ablative-non-ablative procedure for rejuvenating facial skin via use of a laser device called **SmartXide²** (DEKA, Florence), a novelty on the technological market for dermatology and skin surgery.

It exploits dual technology: a CO_2 laser source and a bipolar radiofrequency current (RF). By delivering a fractioned CO_2 laser source at the same time as a bipolar RF emission, **SmartXide²** makes it possible to deliver a total amount of energy equal to the sum of the single energies delivered by the different ablative (CO_2) and non-ablative (RF) sources, thereby balancing the energy emission in favour of one or other source.

It has also been observed that even with low ablative CO_2 laser energy levels delivered simultaneously with 10-30W of RF for about 2 seconds, **SmartXide²** is capable of producing remarkable results in terms of shrinkage and improved skin texture, with downtime only lasting a few days.

As the RF does not depend on skin colour it can be used on all phototypes without any application limits. I consider **SmartXide²** the only device also capable of carrying out "Summer Resurfacing".

Materials and Methods

From March 2011 to February 2012, 48 patients (44 females and 4 males) were enrolled in a clinical study called HRST1 (High Resolution Skin Texture 1) and subjected to Full Face Resurfacing with **SmartXide²**.

Twenty-four patients had atrophic post-acne scars, 20 of whom were females and 4 males; 24 had facial wrinkles due to chronoaging, all of whom were females. The age range varied between 21 and 74 with a mean age of 48.5 years, while the phototypes varied between II and IV according to the Fitzpatrick scale.

The total number of treatments performed consisted of 86 procedures, since 50% of the patients underwent two treatments and 25% underwent three treatments, all spaced 2 months apart.

Three skin aging variables were evaluated: fine lines, tactile roughness and coarse wrinkles. The patients with post-acne scars were selected based on the presence of "atrophic" lesions on their cheeks and sides of the chin, which were classified at the same time in the following categories: Ice-pick, Boxcar and Rolling-car.

Choice of Parameters and Settings

The variations in the following functions of the **SmartXide²** were exploited: mode (D-Pulse, H-Pulse and S-Pulse), energy per pulse (15, 30, 45 and 60 mJ) and RF energy (90, 40, 10 J and RF Off).

Various combinations have been devised with these parameters, thus making it possible to vary the total energy delivered in different modes, favouring the laser rather than the RF.

The **SmartXide²** system introduces an important innovation that allows for accurately adapting the DOT pulse energy to suit the patient's clinical conditions and the pathology to be treated.

Patients suffering from deep atrophic post-acne scars were treated in D-Pulse mode since this pulse enables deeper penetration of the energy into the derma (site of the scarring process) than with the S-Pulse mode.

Eight patients (16.6%) had a prevalence of "ice-pick" (deep) lesions and were treated by administering a



Figure 1. (A)-(B)-(C)-(D) T0, T1, T2 and T4. Downtime 3 days. Patient with wrinkles around eyes, phototype II, Laser CO_2 only: Dwell Time 1000 µs, Spacing 500 µm, Pulse Energy 45 mJ, Stack 3, S-Pulse.

laser pulse energy equal to 60 mJ (with an RF energy of 90, 40, 10 J and RF Off).

It was observed how with the same laser energy, the power and duration of the RF (< 30 W - 3 sec) were indirectly proportional to the post-treatment erythema.

The S-Pulse mode was used to treat patients with more superficial scars and facial wrinkles and the various settings were randomly assigned.

The H-Pulse emission mode was also tested, as this provides a cold vaporisation capable of further reducing post-treatment downtime.

Results

A total of 48 patients completed the study. In all patients treated, the percentage of permanent complications after thirty days was 0%. For the clinical results in patients with atrophic post-acne scars, the physicians' assessments were recorded according to a percentage scale divided into four classes ranging from "no improvement" to "excellent results": 0-25% absence of or no improvement; 26-50% slight improvement; 51-75% good improvement; 76-100% excellent improvement, on a test area on the cheeks or chin. Of these, 8 patients (33.3%) had excellent results, 14 (58.3%) had good improvement, and 2 (8.3%) only slight improvement. No patients reported no improvement (0%).

Discussion

A Besides extolling the virtues of Fractional Laser Resurfacing, current medical theories and scientific literature also recommend the use of RF for non-ablative relaxation of the skin via volumetric heating of the deep derma.

The **SmartXide²** system with its HiScan DOT/RF

handpiece is able to cause ablation, coagulation, necrosis and volumetric heating of the derma in a single emission. Not only can the device be adjusted in terms of balancing between the two sources, but it also makes it possible to control the depth of the tissue removed through ablation and the volume of coagulated tissue surrounding each single fraction. Clinically, the effects obtained contribute to rejuvenate the skin with minimal discomfort and reduced side effects which include mild to moderate swelling, redness and a sensation of heat.

This technique is an innovation compared to other ablative and non-ablative technologies (Laser, RF, Pulsed light) where all the tissue is involved.

The clinical assessments of the physicians conducting the study and the opinions of the 48 patients who underwent treatment clearly demonstrate a positive response to the application and safety of SmartXide² for resurfacing the skin in the case of wrinkles and scars.

Conclusions

In my opinion, the introduction of the SmartXide² as a facial rejuvenation method is a "revolutionary" innovation and its duel ablative non-ablative method makes it possible to perform combined Fractional Laser Resurfacing that can certainly be classified as IV generation resurfacing.

I think a system like this could be extremely valid in clinical practice since it allows for performing a wide variety of treatments ranging from traditional Laser Resurfacing (II generation), to non-ablative photorejuvenation using the RF (III generation), and this new combined method. It is evident that with the HiScan DOT/RF system and its multiple settings, SmartXide² combines the satisfactory results of the fractional ablative laser, with the short downtime of non-ablative methods.

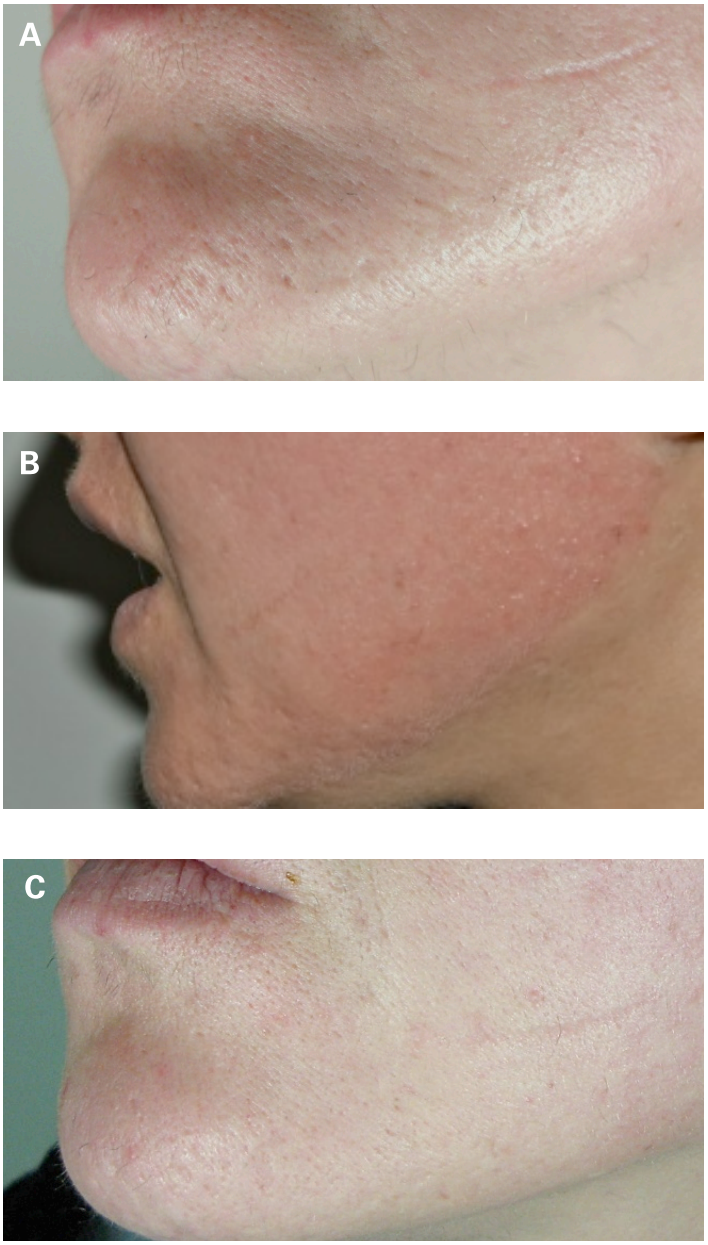
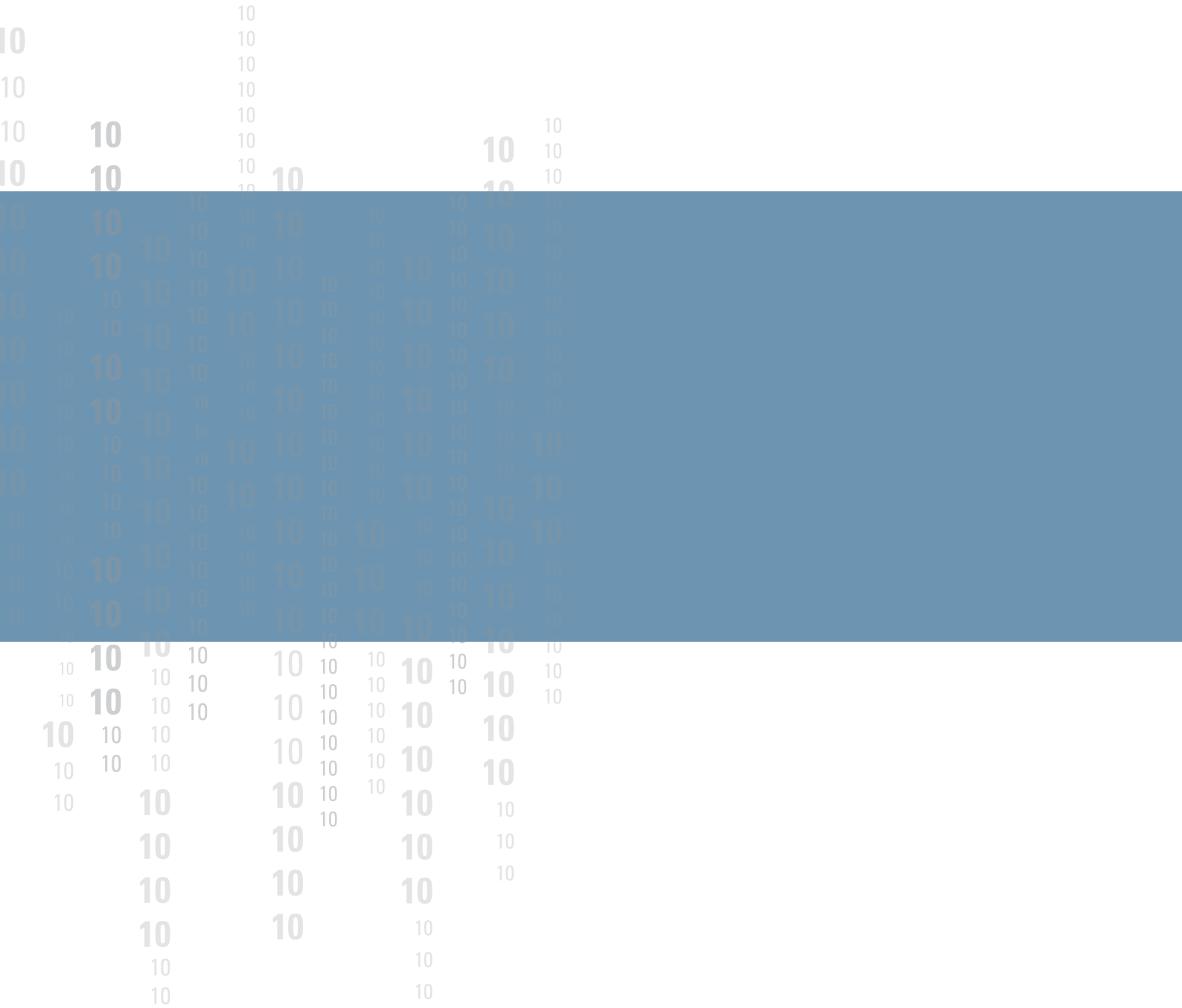


Figure 2. (A) - (B) - (C) T0,T1 andT4. Patient aged 34, phototype III, "ice pick"-type scars Laser CO_2: DwellTime 1000 µs, Spacing 500 µm, Pulse Energy 60 mJ, Stack 2, D-Pulse. RF: Power 30 W, 3 sec. Downtime 5 days.

* Extract from the quarterly "L' Ambulatorio Medico".



The Code of Excellence

www.dekalaser.com

DEKA M.E.L.A. s.r.l.
Via Baldanzese,17 - 50041 Calenzano (FI) - Italy
Tel. +39 055 8874942 - Fax +39 0558832884

El.En. Group

DEKA M.E.L.A. s.r.l. - All rights reserved - In order to improve its products the company reserves the right to modify these specifications without prior notice.