FRACTIONAL ABLATIVE RADIOFRQUENCY RESURFACING IN ASIAN AND CAUCASION SKIN: A NOVEL METHOD FOR DEEP RADIOFREQUENCY FRACTIONAL SKIN REJUVENATION

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Abstract

This paper reports the clinical experience of a multi-center, multiple physician trial with a novel fractional radiofrequency ablative skin resurfacing and rejuvenation device (Fractora, Invasix, Israel) deployed on both Caucasian skin type 1-3 and Asian skin type 4. Histological study demonstrated deep ablation and collagen restructuring in the papillary and reticular dermis. The Fractora device combines the more "cone shaped" ablation seen with CO2 and Erbium lasers with a deep non-ablative heating pattern, seen with other bipolar RF fractional needle resurfacing devices. Ablation, coagulation zones and healing dynamics are analyzed for different energy settings. Two different treatment protocols are suggested: one for light skin and then one for darker skin with a higher risk of post–inflammatory hipper-pigmentation. Treatment results show improvement in skin texture, pores, wrinkles and skin dyschromia.

Materials and Methods

- 20 Caucasian (skin types I-II) and 30 Asian patients (skin types III-IV) with an age range of 21-70 years old, received a single full face, ablative fractional radiofrequency treatment using the Fractora hand piece
- The Fractora hand piece used in this study is powered by the BodyTite platform (Invasix, Israel).
- 60 pin tip (10% surface coverage) & 20 pin tip (small localized lesions)
- For light skin types 1-3 and thick skin 50-62mJ/pin was applied, while for darker skin type IV patients and thinner skin 10-40 mJ/pin was used.
- Pain management: some Caucasian patients treated with high parameters (40-60mJ/pin) underwent subcutaneous hypodermal tumescent infiltrative anesthesia with a mixture of 1 bottle of 1% lidocaine mixed in 500ml of Ringers lactate and 1ml of epinephrine 1:1000. Approximately 150 cc of infiltrate was used in the hypodermal space of the brow, cheek and lower face and another 100 cc if the neck was treated. Prior the tumescent hypodermal infiltrative anesthesia, supra-orbital, infra-orbital, zygomatical facial, temporal, and mental nerve blocks were performed with 10cc of 1% xylocaine. At medium settings (30-40mJ/pin) nerve blocks, topical anesthesia and a Zimmer cold air cooler were used, while at low energy settings (10-30mJ/pin) pretreatment was performed with a topical analgesia and a Zimmer air cooler, or no anesthesia at all.
- A single pass, ablative fractional RF treatment was applied using the 60 pin Fractora hand piece. For those regions with deeper rhytides, such as the upper lips, lower lids or acne scars, a second pass was delivered for patients with lighter skin. Smaller areas such as the lower lid, upper lid and the area around the nose, was treated with the 20 pin tip.
- Antibiotic ointment was applied immediately after the office based treatment. At home, Aquaphor was used to keep the skin moist and until the fractional injury had healed over (usually at 2-5 days) at which camouflage make-up could be applied. Standard Herpes Simplex prophylaxis consisting of 500mg of Valtrex orally twice daily for 7 days was used. Standard photographs were taken prior to the treatment and at the 6 month follow up appointments. Patients were advised to take a few days off following the treatment.

Results

Following the treatment and depending upon the parameters, intense edema and erythema were observed and lasted for several hours and up to 1 week, with a minor degree of edema being observed for up to 2 weeks. Small crusted dots, representing the ablated epidermal–dermal tissue at the opening of the ablative crater, appeared the next day following the treatment and were observed up to 1-2 weeks after the procedure before flaking off.

Indication	Average Improvement Asian Skin (skin types III-IV)	Average Improvement Caucasian Skin (skin types I-II)
Texture	70%	67%
Pores	40%	22%
Wrinkles and Lines	45%	63%
Acne scars	40%	40%
Pigmentation	30%	60%

All patients re-epithelialized within 4-7 days. There were no cases or instances of delayed healing, no significant adverse reactions and specifically, no hypo-pigmentation, PIH and no hypertrophic/hypotrophic scars

Conclusion

Fractional ablative RF treatment with a deep needle based delivery system is a novel and unique fractional, ablative technology in that provides a total skin rejuvenation solution:

- Stimulates and produces the wrinkle reduction and skin tightening seen with ablative fractional CO_2 resurfacing.
- Provides additional non-ablative, bipolar dermal matrix thermal stimulation which provides additional skin tightening similar to non-ablative RF devices.
- Improves pigmented lesions and dyschromia similar to intense pulsed light.
- Potentially improves superficial vascular lesions (additional study with higher statistics is required to determine consistency).