

A full-face study evaluating the safety of a 2,940nm fractional ablative erbium laser for skin resurfacing in Brazilian patients with Fitzpatrick skin types II–VI

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▶ BACKGROUND:

Ablative resurfacing remains the gold standard in skin rejuvenation. Fractional laser resurfacing induces a controlled skin injury, with shorter recovery time and lower risk of adverse effects compared to non-fractional ablative methods. Erbium: yttrium-aluminium-garnet (Er:YAG) lasers are associated with a lower risk of side effects than carbon dioxide laser resurfacing. The 2,940 nm fractional ablative erbium laser has the potential to provide greater efficacy for treatment of mild-to-moderate photo-induced rhytides while minimizing downtime and side effects. In laser skin resurfacing, the main complication among dark-skinned patients is the risk of pigmentary changes.

▶ OBJECTIVE:

This present study intends to evaluate the clinical efficacy, safety and histological changes of a 2,940nm fractional ablative laser for skin resurfacing in Brazilian patients with Fitzpatrick skin types II–VI.

▶ METHODS:

Thirty four women with mild-to-moderate photodamage skin in face, aged 35-55years old, with Fitzpatrick phototype II-VI, were selected for this study. Patients were treated with a fractional ablative 2,940-nm Er:YAG laser (Etherea®, 2940 Single Mode®, Industra® Technologies, Brazil) using the following settings: one pass at energy 10 to 25 mJ/MTZ, spot size 8 mm, pulse width 1ms and spot density 100MTZ/cm². Each participant received only one treatment session and was followed for 3 months. A total of 32 subjects completed the study. Clinical and instrumental evaluations were conducted at baseline and at each subsequent follow-up visit at 30, 60 and at 90 days. The number of wrinkles was documented with standard digital photographs (Visia®, Canfield Imaging Systems, EUA). The improvement of the photodamage before (baseline) and 3 months after the procedures was evaluated by participants and two blinded observers dermatologists. Histopathological assessment for skin biopsy specimens was done before laser resurfacing and after 3months.

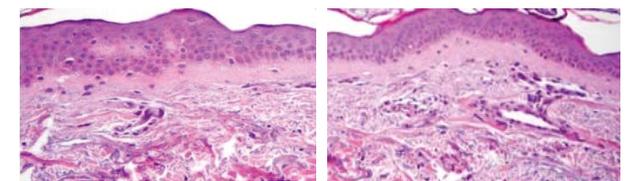
| Parameters and Treatment Guidelines | | Percentage of effectiveness | |
|-------------------------------------|------------------------|-----------------------------|----------------------|
| One pass | Single mode | Percentage | Score |
| Energy | 10 to 25 mJ/mtz | 0% | not effective |
| Pulse Width | 1ms | 0,1-25% | moderately effective |
| Spot Size | Ø8 mm | 26-50% | effective |
| Energy density | 100mtz/cm ² | 51-100% | highly effective |

The effects of treatment (rhytides, pigmentation, skin tone/tightness) were evaluated by two blinded observer dermatologist and graded into four levels: not effective (0%), moderately effective (0,1-25%), effective (26-50%) and highly effective (51-100%).



▶ RESULTS AND CONCLUSION:

Improvements in fine wrinkles and skin texture were observed in all patients. Histology 3 months after the single treatment demonstrated a collagen of dermis thicker, with improvement of the rhytides appearance. Blinded physicians assessment demonstrated effective improvement in rhytides, pigmentation and skin tone/tightness after 3 months of treatment and objective VISIA® measurements confirmed these observations.



No adverse events were reported during the study. All subjects have well tolerated the procedure very well, and a mild to moderate discomfort during treatment was noticed. Fractional tissue ablation offers many potential benefits of a whole-surface ablative skin resurfacing, while minimizing adverse effects as well. The fractional ablative 2,940-nm Er:YAG laser was shown to be safe in the treatment of photodamaged facial in Brazilian patients with Fitzpatrick skin types II–VI.

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