LASERS

ERBYUM FRACIONATED ABLATIVE LASER VERSUS MECHANICAL MICRONEEDLING: A COMPARATIVE HISTOLOGIC STUDY IN HUMAN SKIN

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Introduction: Ablative lasers are well known procedures. Erbyum Yag 2940 nm and Co2 lasers can be used to perform a mix of ablative and/or coagulation dermoepidermal microcolumns. Alternatively, mechanical rollers with tiny needles are used to promote microcolumns of ablative injury for skin thighenning. Due to aesthetic and legal reasons, there are few human histological studies that can prove and compare the clinical results.

Objective: Confirm and compare the histological changes with booth techniques in the same patient at the same time. To define laser parameters that could be used to perform the same results.

Materials and Methods: A 58 years old white man, with laxity and abdominal striae distensae, was submitted to cutaneous biopsies and treatment with Laser and Microneedling. Informing consent was signed explaining the localized scars and different textures of the skin. Skin biopsies and clinical photos were done pretreatment and 20 minutes immediately after Erbyum 2940 nm (fractional scanner assisted at fluences of 300 and 600 Joules/cm2, 5% density, 100 microseconds of pulse duration at 20 Hz) and Microneedling with 2,5 mm depth, crisscross technique, multiple passes; under tumescent anesthesia. Skin biopsy was stained for Hematoxylin and Eosin, Masson Trichome, Picro-Sirus and Voerhoeff.

Results: Diathermal artefacts were evidenced in fractioned Erbyum areas, as well as more intense traumatic effect, as greater adipose inflammatory infiltrate. Disruptive collagenic fibers were evidenced, with a perianexial storiform pattern of type I fibers. Microneedling, in comparison, showed less intense inflammatory infiltrate, with similar collagenic disruptions.

Conclusions: Moderate fluences can avoid epidermal destruction, with good collagen and elastic fibers action. The "Microneedling" and ablative fractional Erbyum laser at reduced fluences can considered tolerable, effective and safer than more intensive ablative treatments.