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Fractional carbon dioxide laser resurfacing of rhytides and photoageing: a prospective study using profilometric analysis.

Kohl E¹, Meierhöfer J, Koller M, Zeman F, Klein A, Hohenleutner U, Landthaler M, Hohenleutner S.

Author information

Abstract

BACKGROUND: Results of profilometric skin analyses after fractional ablative skin **resurfacing** are not only important for evaluating the efficacy of this therapy but are also relevant for physicians practising laser and aesthetic skin therapy. Currently, objective measurements of wrinkle reduction after fractional **CO₂** laser **resurfacing** are scarce, and it remains unclear whether the various facial areas respond differently to this therapy.

OBJECTIVES: To measure wrinkle parameters, the homogeneity of melanin distribution and skin roughness in four facial areas (periorbital, perioral, forehead, cheeks) before and after three fractional **CO₂** laser treatments.

METHODS: Twenty-five women were analysed with regard to wrinkle parameters and mottled pigmentation on the face. We measured wrinkle size, depth and width and the homogeneity of melanin distribution and skin roughness in four facial areas before and after three fractional **CO₂** laser treatments. Additionally, the investigators rated clinical improvement using five-point grading scales.

RESULTS: Wrinkles were significantly reduced in all facial areas, and the best results for wrinkle size and depth were found for the cheeks (-58.3%, $P = 0.018$ and -51.3%, $P = 0.018$) and the periorbital area (-35.1%, $P < 0.001$ and -31.1%, $P = 0.001$, respectively). The percentage improvements of rhytides evaluated by the investigators were mostly similar to those found from in vivo measurements. The homogeneity of melanin distribution in the skin was improved by 21.4% on the cheeks ($P = 0.012$) and by 24.0% in the periorbital area ($P < 0.001$). Clinical investigators rated the improvement of mottled pigmentation considerably higher (51-75%).

CONCLUSIONS: After a serial treatment with the fractional **CO₂** laser, we measured considerably varying wrinkle reduction depending on the area of the face, and the best results were found for the cheeks.

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