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Single-Pass Carbon Dioxide Versus Multiple-Pass Er:YAG Laser Skin Resurfacing: A Comparison of Postoperative Wound Healing and Side-Effect Rates

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ABSTRACT

BACKGROUND. Ablative laser skin resurfacing with carbon dioxide (CO₂) and erbium:yttrium-aluminum-garnet (Er:YAG) lasers has been popularized in recent years and their side effects individually reported. No prior study, however, has directly compared the relative healing times and complications rates between the two different systems.

OBJECTIVE. To evaluate and compare postoperative wound healing and short- and long-term side effects of single-pass CO₂ and multiple-pass, long-pulsed Er:YAG laser skin resurfacing for the treatment of facial photodamage and atrophic scars.

METHODS. A retrospective chart review and analysis of sequential clinical photographs were performed in 100 consecutive patients who underwent laser skin resurfacing with single-pass CO₂ (Ultrapulse 5000; Coherent, Palo Alto, CA, N=50) or multiple-pass, long-pulsed Er:YAG laser resurfacing (Contour; Sciton, Palo Alto, CA, N=50). All laser procedures were performed by a single operator for the amelioration of facial rhytides or atrophic scars. The rate of re-epithelialization, duration of erythema, and presence of complications were tabulated.

RESULTS. The average time to re-epithelialization was 5.5 days with single-pass CO₂ and 5.1 days with long-pulsed Er:YAG laser resurfacing. Postoperative erythema was observed in all patients, lasting an average of 4.5 weeks after single-pass CO₂ laser treatment and 3.6 weeks after long-pulsed Er:YAG laser treatment. Hyperpigmentation was seen in 46% of the patients treated with single-pass CO₂ and 42% of the patients treated with the long-pulsed Er:YAG laser (average duration of 12.7 and 11.4 weeks, respectively). No incidences of hypopigmentation or scarring were observed.

CONCLUSION. Skin resurfacing with single-pass CO₂ or multiple-pass long-pulsed Er:YAG laser techniques yielded comparable postoperative healing times and complication profiles.