

Fractional Nonablative 1540 nm Laser Resurfacing for Thermal Burn Scars: A Randomized Controlled Trial

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Full Abstract

BACKGROUND AND OBJECTIVE:

Burn scars cause permanent and disfiguring problems for many patients and limited treatments are available. Nonablative fractional lasers induce a wound healing response, which may lead to remodeling of burn scar texture. This randomized trial evaluates efficacy and adverse effects of 1540 nm fractional laser versus untreated control for burn scars.

MATERIALS AND METHODS:

Seventeen adult patients with burn scars of 1 year or older and Fitzpatrick skin types I-III were included in the study. Side-by-side test areas were randomized to (i) three monthly 1540 nm fractional laser treatments and (ii) no treatment. Blinded on-site response evaluations were performed 4 and 12 weeks after final treatment. Primary endpoints were change in skin texture (0-10 categorical scale), pain and adverse effects. Secondary endpoints were change in skin color and patient satisfaction (0-10 categorical scales).

RESULTS:

Preoperative skin texture was similar and moderately uneven in treated and untreated sites (6 (5.5-8), $P = 1$). Postoperative laser-treated skin appeared significantly more even and smooth compared to adjacent untreated control sides (4 weeks:

4 (2.5-6), $P = 0.0015$; 12 weeks:

4 (2-5), $P = 0.0007$). Patients were satisfied with treatments (week

12:

7 (4-8.5)) and 8/17 patients evaluated burn scars to be moderately or significantly improved. Skin redness increased transiently from laser treatments. No significant differences were found in skin pigmentation. Patients experienced moderate pain (5 (3.5-6)), erythema (17/17/16 patients, after first/second/third treatments), edema (9/9/8), bullae (3/0/3), and crusts (4/0/4). One patient had minor scarring. No adverse effects were seen in untreated control areas.

CONCLUSIONS:

Nonablative 1540 nm fractional laser improves burn scar texture, which raises a new potential for future burn scar treatment. (C) Copyright 2009 Wiley-Liss, Inc.