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Picosecond laser treatment of atrophic and hypertrophic surgical scars: In vivo monitoring of results by means of 3D imaging and reflectance confocal microscopy.

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ABSTRACT

PURPOSE: A growing interest in the treatment of scars with picosecond laser (PSL) is evident, although the basis for scar improvement is poorly understood. The aim is to provide new insights into the role of PSL in scar improvement through noninvasive in vivo skin imaging. **METHODS:** A total of 16 patients with 20 surgical scars were treated with three sessions of PSL. Efficacy was estimated through blinded evaluations performed by external dermatologists, Vancouver Scar Scale (VSS), Global Assessment Improvement Scale (GAIS), patient satisfaction, 3D imaging, and reflectance confocal microscopy (RCM) assessments at T0 (before treatment) and at T1 (6 months post-treatment). Safety was estimated through adverse events evaluation. **RESULTS:** In vivo findings revealed the modulation of pigmentation, vascularization, improved texture ($P = .0001$; 3D imaging), and variations of collagen remodeling (at RCM) in both atrophic and hypertrophic scars. A reduced epidermal thickness (at RCM) was observed in hypertrophic scars ($P < .01$) after treatment. **CONCLUSIONS:** Our results confirm that PSL is an effective and safe technique for the treatment of atrophic and hypertrophic scars. In detail, we describe herein 3D and RCM features enabling the visualization of variations occurring in the skin after PSL treatment. © 2019 John Wiley & Sons A/S. Published by John Wiley & Sons Ltd. **KEYWORDS:** 3D imaging; atrophic scar; hypertrophic scar; in vivo skin imaging; picosecond laser; reflectance confocal microscopy PMID:31338926 DOI:10.1111/srt.12755