

Medical > In Vivo > Wound healing

6

Applicability of confocal laser scanning microscopy for evaluation and monitoring of cutaneous wound healing.

Lange-Asschenfeldt S, Bob A, Terhorst D, Ulrich M, Fluhr J, Mendez G, Roewert-Huber HJ, Stockfleth E, Lange-Asschenfeldt B.; J Biomed Opt. 2012 Jul;17(7):076016.

ABSTRACT

There is a high demand for noninvasive imaging techniques for wound assessment. In vivo reflectance confocal laser scanning microscopy (CLSM) represents an innovative optical technique for noninvasive evaluation of normal and diseased skin in vivo at near cellular resolution. This study was designed to test the feasibility of CLSM for noninvasive analysis of cutaneous wound healing in 15 patients (7 male/8 female), including acute and chronic, superficial and deep dermal skin wounds. A commercially available CLSM system was used for the assessment of wound bed and wound margins in order to obtain descriptive cellular and morphological parameters of cutaneous wound repair noninvasively and over time. CLSM was able to visualize features of cutaneous wound repair in epidermal and superficial dermal wounds, including aspects of inflammation, neovascularisation, and tissue remodelling in vivo. Limitations include the lack of mechanic fixation of the optical system on moist surfaces restricting the analysis of chronic skin wounds to the wound margins, as well as a limited optical resolution in areas of significant slough formation. By describing CLSM features of cutaneous inflammation, vascularisation, and epithelialisation, the findings of this study support the role of CLSM in modern wound research and management.