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**Characterization of microthermal zones induced by fractional radiofrequency using reflectance confocal microscopy: a preliminary study.**

*Shin MK, Park JM, Lim HK, Choi JH, Baek JH, Kim HJ, Koh JS, Lee MH., Lasers Surg Med. 2013 Oct;45(8):503-8. doi: 10.1002/lsm.22175. Epub 2013 Aug 31.*

### **ABSTRACT**

**BACKGROUND:** The microthermal zone (MTZ) produced by fractional device have been mostly evaluated through histopathologic analysis. Study of ablative type MTZ created by fractional device and skin thermal interaction using in vivo reflectance confocal microscopy (RCM) has been rarely reported. **OBJECTIVES:** We evaluated the in vivo human RCM skin images of ablated fractional radiofrequency (RF) treatment to demonstrate the thermal interaction between RF and skin tissue. **SUBJECTS AND METHOD:** Three healthy male subjects underwent a single irradiation of fractional RF on the upper back area. The diameter, area, and depth of the MTZ was measured using RCM. Three female domestic swine were used for comparative histopathological study. **RESULTS:** After RF treatment, crusted holes surrounding pale edematous rings were visible in RCM images. The empty spaces correlated to the location of ablative channels, and the presence of thermal modification zones corresponded to areas with a whitish ring showing high reflectance. Ablation depth increased in proportion to the energy of fractional RF. However, the diameter of the thermal modified zone was relatively constant regardless of RF energy. **CONCLUSIONS:** RCM successfully identified in vivo acute thermal changes after fractional RF. The results obtained in this study provide a clearer picture of tissue-thermal interactions in the skin.