SELECTIVE TRANSCUTANEOUS DELIVERY OF ENERGY TO FACIAL SUBDERMAL TISSUES USING THE ULTRASOUND THERAPY SYSTEM


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Background/Objectives: The Ultrasound Therapy System is a novel modality capable of delivering controlled thermal ablative zones at various depths while sparing the overlying epidermis. The purpose of this study was to investigate how varying source conditions affected the depth of lesions within facial skin tissue.

Design/Materials and Methods: Skin from five nonfixed, human cadaver heads was used in this experiment. Two probes were utilized: a 7.5MHz probe (3.0mm depth) and a 4.5MHz probe (5.0mm depth). Treatments were performed at four different exposure times, each at two unique power settings (energy 1–10 J). Skin was excised, examined grossly for thermal lesions using LDH stain, and then submitted for histopathology. Lesion depth was measured using image analysis software (Scion Image).

Results: The Ultrasound Therapy System reliably delivered discrete, thermal coagulative lesions at the pre-set focus depths. Histologic images revealed no damage to deep structures including the parotid gland and facial nerve, as well as the overlying epidermis.

Conclusion: The Ultrasound Therapy System is capable of accurately delivering controlled, thermal lesions at predictable depths within the facial soft tissues. Further study will allow us to understand the utility of this modality in treating the aging face.

ASLMS 2006