Efficacy and Safety of High-Intensity Focused Ultrasound for the Treatment of Obesity: A Pilot Study

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Introduction: High-intensity focused ultrasound (HIFU) has been recently introduced as a non-invasive therapeutic modality for controlling subcutaneous fat. However, there have been few studies on the efficacy and safety of HIFU for human.

Objective: To evaluate the efficacy and safety of HIFU device for sculpting the abdomen, upper arm and thigh

Materials and Methods: Ten subjects with more than 10 mm subcutaneous fat thickness of abdomen, upper arm and thigh were recruited. The procedure was performed using HIFU device for one time. The primary endpoints were average reduction amount (mm) of the treated area measured by ultrasound at 12 weeks after procedure. The secondary efficacy endpoints were the reduction amount (mm) of circumference of the treated area, the degree of pain (VAS) and satisfaction scale.

Results: The average reduction amount of subcutaneous fat thickness for the abdomen, upper arm and thigh were -3.20 ± 2.35cm, -2.00 ± 1.15cm, and -2.40 ± 3.72cm, respectively. The reduction amount of the abdomen (p=0.0012) and arm (p=0.0004) were statistically significant. The reduction amounts of the abdomen and arm circumference were significantly decreased (p=0.0054 and 0.0042, respectively). Patient satisfaction was the highest on the abdomen. Pain was generally tolerable.

Conclusions: These results suggest HIFU can be one of the effective therapeutic modalities for excessive subcutaneous fat.