

Use of Acoustic Wave Therapy (AWT) in the Treatment of Cellulite

Background:

Cellulite is defined as skin relief alterations that give the skin an orange peel or mattress appearance. Historically, few treatments have been truly effective. Several studies have shown extracorporeal pressure waves, similar to Acoustic Wave Therapy (AWT) to be effective in the treatment of cellulite.

Objectives:

To determine the effectiveness of Acoustic Wave Therapy (AWT) delivered using a ballistic pressure head (D-Actor) in improving the appearance of cellulite.

Methods:

Patients were recruited from phone calls and inquires made at a one location medical practice office. Patients were treated for cellulite based on their regions of complaint. An area was defined as a 20x30 cm area (typically the front or back of one thigh). Each area received 6 treatments consisting of 1,000 vertical pulses and 1,000 horizontal pulses. Patients had photographs and circumference measurements taken before and after treatment. Weight and electrical impedance measurements were taken before and after each treatment.

Results:

Adequate weight and body fat data was collected on 102 patients. Thigh circumference data was collected on 72 patients. Patient satisfaction surveys have been completed by 19 patients to date. All patients contributing data had before and after pictures taken. Average weight loss was small, 0.19 lbs (0.08 kg), and fell short of statistical significance, $p=0.21$. Similarly percentage body fat using lower body electrical impedance was small at 0.02% a non-significant change with $p=0.45$. Thigh circumference decrease was significant at 0.45 cm, $p=0.025$. Patients rated their posterior thigh treatment at 84% of perfect and anterior thigh treatment at 52% of perfect. Only 11% of responders (2 patients) disagreed that they were more confident in revealing clothing. Sixty eight percent of responders were more comfortable in revealing clothing and 74% were more comfortable with their body. Only 11% (2 patients) disagreed that they were more confident in their body. Seventy three percent of responders stated the treated area was closer to the appearance they desired. Only 11% of responders (2 patients) responded that the area was not closer to the appearance they desired. Before and after pictures reveal moderate to substantial improvement in the appearance of cellulite. Continued improvement in cellulite appearance was seen for up to 4 weeks past the end of treatment (maximum duration of follow-up).

Conclusions:

AWT delivered by a ballistic impulse method is effective for improving the appearance of cellulite in the majority of patients. A small decrease in thigh diameter is also seen. No significant changes in weight or body fat composition were seen, The optimum number and timing of treatments and the use of complimentary techniques requires further study.

Cellulite is defined as changes in the surface contour of the skin that result in an orange peel or “mattress” appearance of the skin.¹ It is present in post-pubertal females of all race and ethnic types, affecting 85-98% of this population. Cellulite is not defined as a pathologic condition, but it is a substantial cosmetic concern for many adult females. It can cause significant psychological and self-worth issues, and commonly affects clothing and activity choices. Several contributory factors have been proposed for the formation of cellulite: altered connective tissue septae, vascular changes, inflammatory changes,² and protrusion of subcutaneous adipose tissue into the reticular dermis. Body mass index, thigh circumference, and the percent of fat in the thigh correlate with the severity of cellulite. Skin compliance (elasticity) has a negative correlation.³ Biopsy studies have pointed to sclerotic fibrous tissue strands to playing the predominant role in the “mattress” appearance. Biopsy studies also confirm the role of fat protrusion into the reticular



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dermis in the severity of cellulite.⁴ Research has suggested pressure or acoustic waves are effective in disrupting the sclerotic fibrous septae responsible for much of the uneven appearance of cellulite.⁵ Acoustic wave therapy has also been demonstrated to increase the thickness of the reticular dermis and decrease the protrusion of fat into the area.⁶ It appears that acoustic wave therapy (AWT) is a promising new treatment for improving the appearance of cellulite. The purpose of this study was to demonstrate the effectiveness of AWT using a 20 mm ballistic head (D-Actor) in improving the appearance of cellulite.

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