

Efficiency of Combination Therapy of High Focal Ultrasounds HIFU with Cold Laser 635 nm on Adipose Tissue

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Abstract

Objective: This study was conducted to ascertain the efficiency of combination therapy of High Focal Ultrasounds HFU with Cold Laser 635 nm on adipose tissue (cellulite and fat) located on belly, hips and legs.

Methodology

Group of selected patients: 50 patients were of different age groups ranging from 25 to 55 years, and five of them were men. Their Body Mass Index (BMI) values ranged from 17.9 to 32.5. They went through four to six sessions depending on their availability. Some even chose the ultrasound-laser combination and only laser within 72 hours and then again the two-phase session. And some only underwent ultrasound + laser once a week for reasons of agenda. The study was conducted from January to end of February 2010.

Results: The sonography showed that already after the second session "large fat bulges were ripped open", as well as septa between them, and there appeared a linear layout in which the cells were generally smaller and organised in lines, while upon the first examination the layout was very chaotic.

Conclusion: Combination of action of HIFU on fat cells, with biostimulation by Laser 635nm reduces cellulite tissue thickness. The linear layout of the cells improved the orange skin appearance on the dermis.

Keywords: Overweight; Obesity; Cellulite; Laser; HIFU

Introduction

High Focalized Ultrasounds (HFU) [1,2] above one Mega Hertz, operate a biophysical effects on the tissue that is to say in vivo condition, changes in the extracellular fluid, physical effect on cells, tissues due to the shear forces applied on the membrane level [3].

More than one thousands beams are pulsed simultaneously in focus mode by a gold based focal ceramics; they are pulsed adjacent one to the other to be able to fractionate the adipose fat tissue. The transducer of Spa-shape allows high intensity (above 1 MHz) with ten level of power. The transducer is piloted by software and operator adapts energy level delivered in male or female patient in view of right calibration of focal point under the dermis [3,4].

Low Level Laser Therapy (LLLT, also known as photo biomodulation, cold laser therapy and laser biostimulation) is an emerging medical and technique in which exposure to low-level laser light or light-emitting diodes are used to stimulate cellular function possibly leading to beneficial clinical effects [5].

Certain wavelengths of light at certain intensities (or irradiance to use the technically correct term) delivered by laser source may affect tissue regeneration, inflammation:

Cold laser increases cell metabolism, enzymatic responses, cell membrane permeability, boost microcirculation and stimulate vasodilatation and lymphatic flow. All those processes promote the fat elimination [5].

Material and Method

SPASHAPE is a combined treatment method based on patented Medixsysteme, France for HIFU High Focalized ultrasounds+635 nm LASER.

Fifty patients were monitored on our Spa Shape apparatus

over the course of six weeks. The aim of the study was to prove the circumferential reduction of fat in centimetres, effect of the apparatus on cellulite and last but not least sonographic monitoring of the actual reduction of subcutaneous adipose tissue [1].

Results

Patients, who attained the highest level of satisfaction, were those who had used the apparatus for reducing cellulite; it was considerably reduced after only four sessions. Also circumference was reduced in those clients who wished to reduce their body fat. The total reduction reached 3.25 cm on average.

The circumferential reduction between 0.5 and 7 cm appeared to be very broad and absolutely individual. The highest success rate occurred in a client who had gone through six sessions and strictly adhered to recommendations concerning the consumption of liquids, low fat diet with increased vegetable portion and regular exercises lasting from 30 to 60 minutes every day.

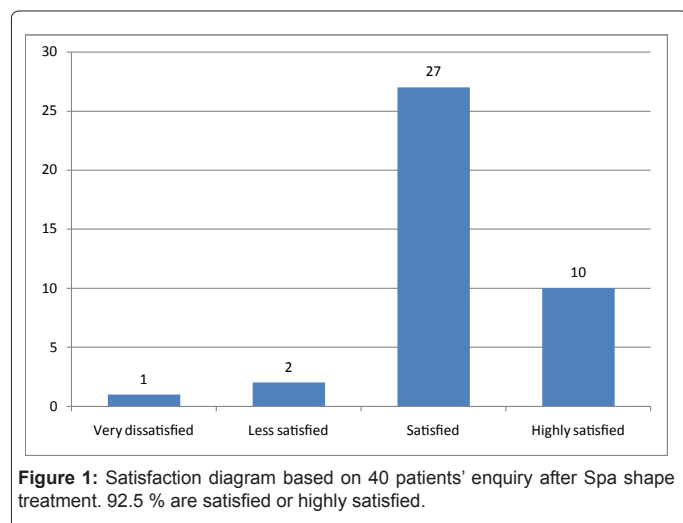
Also the ultrasonic examination of the fat tissue showed some very interesting results. The tissue reduction is not proportionate to the circumferential reduction (reduction in area). Its range mainly depends on initial values of the subcutaneous adipose tissue. It was observed that when you are in presence of small adipose tissue, and/or a patient

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with the lowest BMI, the smaller fat reduction you would obtained. Thus the values oscillated between 0.2 and 2.5 cm.

It can be estimated from the measured values that the loss is 1.3 cm on average (measured by the adipose tissue depth). The highest fat reduction was measured in the abdomen area.

Discussion

The examinations performed even during the Spa Shape action revealed an interesting fact-sonography showed that already after the second session "large fat bulges were ripped open", as well as septa between them, and there appeared a linear layout in which the cells were generally smaller and organised in lines, while upon the first examination the layout was very chaotic [1]. This can explain why such great success was attained in cellulite.

Any larger reduction of adipose tissue, superior to 7 cm, is a much more complex process and so no prompt improvements can be expected without a proper diet regime and physical exercises, and repeated procedures. But even clients with no huge reduction of adipose tissue noticed that the area under treatment (either abdomen or thighs) was visibly strengthened after the Spa Shape treatment and looked firmer in movement, without the "shuddering fat" effect.

Conclusion

It is, however, absolutely evident that in the case of slim persons with cellulite the apparatus is unique and very successful (Figure 1). And when striving for true reduction of body size, it is an excellent support tool for tightening and strengthening tissues and faster dismantling of fats in the area treated.

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