

ORIGINAL ARTICLE

Lipomassage Endermologie Versus Monopolar Radiofrequency on Cellulite in Females

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ABSTRACT

Aim: The main objectives of the study was to assess the therapeutic efficacy of lipomassage endermologie technique versus monopolar radiofrequency as a treatment modality for minimizing cellulite formation.

Methods: This study included 45 female patients with cellulite at their abdomen. They were divided into three equal groups 15 patient for every group. Group A received lipomassage endermologie therapy. Group B received monopolar radiofrequency therapy. Group C received manual lymphatic drainage therapy. Skin fold and appearance of skin were used to investigate cellulite. Both parameters were measured before the treatment (Pre) and at the end of the treatment (post) after six weeks for the three groups using skin fold caliper and cellulite grading scale.

Results: There was significant decrease in cellulite in mono polar radio frequency group (Group B) compared to lipomassage endermologie therapy group (Group A).

Conclusion: In relation to cellulite grading scale and skin fold caliper the study revealed that the results obtained in mono polar radio frequency (Group B) were superior to that of to lipomassage endermologie therapy (Group A).

Keywords: Lipomassage, Endermologie, Monopolar Radiofrequency, Cellulite

INTRODUCTION

Cellulite is defined as changes in the surface contour of the skin that result in orange peel or "mattress" appearance of the skin. Cellulite is not for many adult female¹. Cellulite is characterized by an irregular, dimpled of the skin which is mainly found on the thighs, buttocks and abdomen².

Between 85% and 98% of post-pubertal female display some degree of cellulite. It is prevalent in women of all races but is more common in Caucasian female than in Asian female. Cellulite is rarely seen in males. However, it may affect males with androgen-deficient states such as hypogonadism. Cellulite is best considered to be multi factorial in etiology, including structural, genetic, and endocrine abnormalities. Enlargement of fat cells and poor microcirculation are the main cause of pathophysiology of cellulite. A variety of topical preparation, massage. Surgical procedures such as, liposuction and subcision have been supposed to enhance the cellulite condition by improving microcirculation in the affected areas. However, most procedures offer suboptimal and inconsistent clinical affects and/or a delayed therapeutics outcome³.

Louis Paul Guitay (LPG) Endermologie, a treatment method patented by Louis Paul Guitay (LPG System, Nice, France), constitutes a true revolution in the field of physical therapy, both for clinical applications and aesthetics. This technique is considered a new trend in principle and in application of massage. Endermologie is performed by equipment and different protocols for variant pathologies. The equipment consists of a patented tool, the Cellu M6TM, produced by LPG System in different versions, which allows stretching the skin in various directions⁴.

Radiofrequency Therapy is electromagnetic radiation in the frequency range of 3-300GHz. The main effect of radio frequency energy on living tissue is considered to be thermal. The aim of the modern equipments based on these frequency ranges is to heat skin layers. The direct

effect of RF can induce dermal heating and make collagen degeneration. Wound healing sequences enhance the remodeling of collagen fibers and wound contraction, which improves the appearance of mild to moderate skin laxity. Previous studies reported effect in the treatment of laxity that includes the periorbital area and jowls. Epidermal melanin is not at risk of destruction and treatment of all skin types is possible because radiofrequency energy is not dependent on specific chromophore interaction. Radiofrequency-based equipments have been used for non ablative skin rejuvenation, treatment of unwanted hair, atrophic scar revision, vascular lesions and acne. The use of RF is becoming more popular, although a misunderstanding exists regarding the mechanisms and limitations of its actions⁵.

The present study was designed to assess the therapeutic efficacy of LPG (Louis Paul Guitay) endermologie technique versus monopolar radiofrequency as a treatment modality for minimizing cellulite formation.

MATERIALS AND METHODS

Forty five female patients with cellulite at their abdomen, their ages ranged from (25 to 45 years). They were selected from Clinical Outpatients at Banha Hospital. Duration of treatment was three months. Initial evaluation was done before sessions to collect data, then another evaluation after six weeks. Finally follow up the results after three months. Patients were randomly subdivided into three equal groups. Group A (Lipomassage endermologie technique group): Fifteen females patients who had cellulite at the abdomen, and they received lipomassage endermologie technique (LPG) (45 minutes session, two times per week, for a total of 12 sessions), plus Manual Lymphatic Drainage. Group B (Monopolar Radiofrequency group): Fifteen female patients who had cellulite at the abdomen, and they received monopolar radiofrequency

therapy (20-30 minutes session, two times per week for 6 weeks), plus Manual Lymphatic Drainage. Group C (Manual Lymphatic Drainage): Fifteen female patients who had cellulite at the abdomen, and they received manual lymphatic drainage technique (20-30 minutes / session, four times a week for 6 weeks).

All patients were non-pregnant females and free from any pathological conditions that might affect the results. Patients with diseases of the skin, thrombosis, malignoma or chemotherapy, anti- coagulation therapy, Cortisone-therapy , metabolic disorders, inflammation within treatment area or morbid obesity (BMI>40) were excluded.

Skin fold in cm and appearance of skin were the parameters which had been used to investigate cellulite in this study. Both parameters were measured before the beginning of the treatment (Pre) and after six weeks at the end of the treatment (post) for the three groups using skin fold caliper and cellulite grading scale.

Ethics: The procedures followed were in accordance with ethical standards of the latest (2008) version of Helsinki Declaration of 1975. The study had approved by Scientific Ethical Committee of faculty of physical therapy, Cairo University, Egypt. Clear instructions were given to all patients and they were asked to sign a detailed informed consent to be enrolled in the study.

Statistical Analysis: Descriptive statistics and ANOVA test was conducted for comparison of the mean age between groups. ANOVA test was carried out for comparison of pre and post treatment mean values of skin fold thickness between the three groups and was followed by Tukey post hoc test to identify the significance difference between each two groups. Paired t test was conducted for comparison between pre and post treatment mean values of skin fold thickness in each group. Kruskal-Wallis test was carried out for comparison of Cellulite Grading Scale between the three groups and was followed by Mann-Whitney U test to identify the significance difference between each two groups. Wilcoxon Signed Ranks Test was done for comparison between pre and post treatment median values of Cellulite Grading Scale in each group.

RESULTS

As observed in table 1, the mean ± SD age of group A was 35.6 ± 5.84 years with maximum value of 45 years and minimum value of 25 years. The mean ± SD age of group B was 34.66 ± 4.4 years with maximum value of 44 years and minimum value of 27 years. The mean ± SD age of group C was 36 ± 4.82 years with maximum value of 45 years and minimum value of 29 years. There was no significant difference between the three groups in the mean age values (p = 0.76).

The mean ± SD skin fold thickness pre treatment of group A, B, and C were 6.3 ± 1.23, 6.15 ± 1.19 and 6.12 ± 1.11 cm respectively. There was no significant difference in the skin fold thickness between the three groups pre treatment (p = 0.91) (Fig. 1).

The mean ± SD skin fold thickness post treatment of group A, B, and C were 4.95 ± 0.92, 3.96 ± 0.96 and 5.8 ± 0.92 cm. There was a significant difference between group A, B and C in skin fold thickness post treatment (p = 0.0001) (Fig. 2). The mean difference between group A and

B was 1 cm. There was a significant decrease in skin fold thickness of group B compared with group A (p = 0.01). The mean difference between group A and C was -0.85 cm. There was a significant decrease in skin fold thickness of group A compared with group C (p = 0.04). The mean difference between group B and C was -1.84 cm. There was a significant decrease in skin fold thickness of group B compared with group C (p = 0.0001).

The median value of cellulite grading scale post treatment of group A, B, and C were 2, 1, and 3 respectively. There was a significant difference in cellulite grading scale between the three groups post treatment (p = 0.0001) (Fig. 3). There was a significant decrease in cellulite grading scale of group B compared with group A post treatment A (p = 0.02). There was a significant decrease in cellulite grading scale of group A compared with group C post treatment A (p = 0.0001). There was a significant decrease in cellulite grading scale of group B compared with group C post treatment A (p = 0.0001).

Table 1: Comparison of the mean age between group A, B, and C:

	Age (years)		
	Group A	Group B	Group C
$\bar{X} \pm SD$	35.6 ± 5.84	34.66 ± 4.4	36 ± 4.82
Minimum	25	27	29
Maximum	45	44	45
F-value	0.27		
p-value	0.76		
Significance	NS		

Figure 1: Pre treatment mean values of skin fold thickness of group A, B, and C.

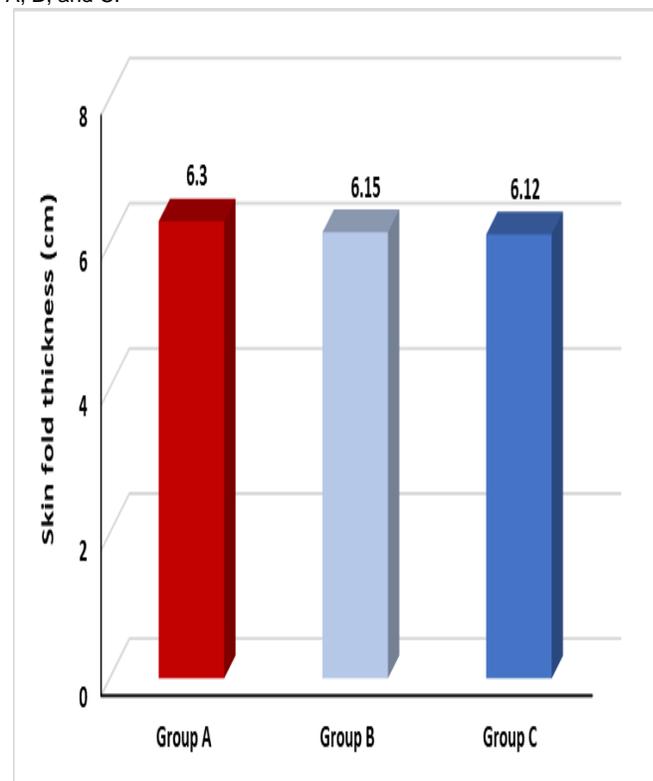


Figure 2: Post treatment mean values of skin fold thickness of group A, B, and C.

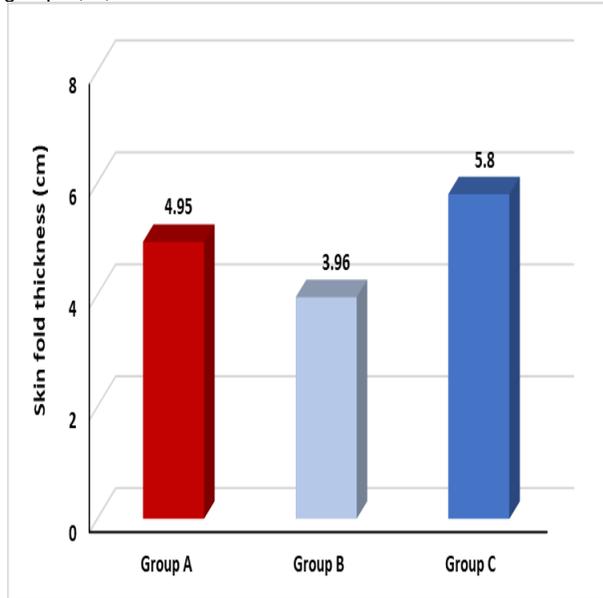
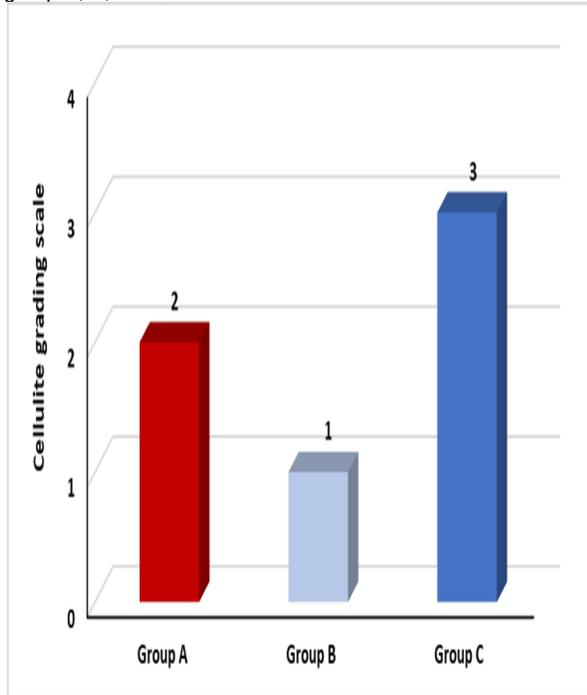


Figure 3: Post treatment median values of cellulite grading scale of group A, B, and C



DISCUSSION

The main findings of the current study indicated a considerable differences in the obtained data for skin fold measurements and cellulite grading scale pre and post treatment application in the group of monopolar radiofrequency compared to lipomassage endermologie group and manual lymphatic drainage group.

These differences were consistent with those reported by, Zekayi Kutlubay et al⁶, LPG endermologie is an effective and alternative therapy device for slimming and body contouring. Michael I Kulick⁷ reported that, The Smooth shapes equipment provided improvement in area surface contour (cellulite) 6 months after the last therapy in most of patients based on patient survey and VECTRA analysis.

Doris Hexsel⁸ designed the first study to examine the effects of this equipment on cellulite which was done over a short treatment period. The therapy proved to be safe and efficient, representing a new treatment modality that is time and cost-effective for patients and physicians.

Macrene et al⁹. concluded that unipolar radiofrequency device is a safe technique for the treatment of cellulite and observed a quantified improvement which did not achieve statistical significance and good results was observed in patients following a mean of four treatment at 2 week intervals.

Goldberg et al¹⁰ used a unipolar radiofrequency device for a total of six treatments. Subjects were assessed before and 6 months after therapy with clinical photographs, biopsies, clinical measurements, blood lipid, and MRIs evaluations. Results showed that 27 subjects showed evidence of clinical improvement. No MRI or lipid abnormalities were noted. They concluded that upper part of high skin cellulite can be improved with a new unipolar radiofrequency equipment. Histologic changes demonstrate skin tightening as the method of improvement.

Haim and Andrea¹¹ pointed out that the tripollar is an efficient, safe non-invasive technology leading to body shaping and skin tightening. The histological data show changes at the dermal and fat layers following tripollar therapies resulting in increased collagen fibers regeneration and stimulated fat cells metabolism.

Sylvie and Marie¹² collected human skin sample from abdomino plasty surgery and facial lifts, to assess anti-aging effects and the lipolytic of the apollo™ equipment powered by triPollar RF technology. In this study, the anti-cellulite effect was evaluated by the dosage of released glycerol and histological analysis of the hypodermis. The results showed that tri polar treatment had a significant increase in glycerol release in the skin samples. The structure of fat cells was changes are shape and modification of the fibrous tract was detected in the fat layer. It was concluded that there was cellulite reduction and alteration in the hypodermal layer in fat layers accompanied by structural and biochemical enhancing in dermal collagen fibers, which result in skin tightening.

CONCLUSION

Monopolar Radiofrequency therapy was superior to LPG endermologie technique in reducing cellulite. Monopolar Radiofrequency and LPG endermologie technique at the selected dose were safe, effective, and available way of treatment to control skin dimpling in females with cellulite. Measurement of cellulite severity by cellulite grading scale and skin fold caliper methods were accurate and useful methods used to measure the rate of improvement. The selected dose was effective in the treatment of cellulite.

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