

Radio Frequency and the Flabby Arms in Females after Liposuction

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Abstract: The current study was carried out to evaluate the efficacy of the radiofrequency on the flabby arms in females after liposuction. Forty female patients with flabby arms after liposuction operations were randomly divided into two equal groups (study group and control group). Methods of assessment were the skin fold caliper and the tap measure. For the study group, patients received RF therapy twice / week for two months while the control group received only liposuction. Results showed that there was significant decrease in arm size and skin fold in the study group compared with the control group, the study revealed that the results obtained in the study group were superior to that of control group. It was concluded that radiofrequency (RF) was effective in improving cosmetic appearance of arm decreasing skin laxity and improving the appearance.

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1.Introduction:

Patients with massive volume or skin laxity typically were not ideal candidates for liposuction treatment due to the excess amounts of loose skin after the procedure, the feasibility, safety, and efficacy of a novel radio frequency device (Body Tit system) for radiofrequency after Liposuction (RFAL) were prospectively evaluated with overweight and weight loss patients.^(1,2,3)

Patients who had laxity but desire smooth, toned upper arms were frequently unable to obtain improvement in their appearance with diet and exercise alone, perhaps because few patients qualify as having a Stage 1 or Stage 2a degree of ptosis (which, in essence, designates minimal-to-moderate fat excess and skin laxity). Most patients who present for upper arm contouring in the United States are classified as Stages 2b, 3, or 4, and the treatment protocol for these patients involves brachioplasty.^(1,4)

Flabby arm patients suffer from a relatively common condition, specifically, excess skin laxity of the upper arm. This extra skin sagging and residual fat, loose skin and tissue of the upper arm wiggles and undulates in an aesthetically displeasing fashion and can cause a cosmetically displeasing thickness of the upper arm, which can make undesirable cosmetic appearance. Causes of flabby arms was usually a as a result after losing weight, liposuction operations and brachioplasty although they can also be caused hereditary.^(1,2,5)

Liposuction as a choice of treatment However, many patients are reluctant to undergo treatment with brachioplasty, discouraged by the appearance of a long scar, and they may choose to avoid treatment. Furthermore, surgeons who treat patients with upper

arm lipodystrophy and significant skin laxity have been limited for many years to only two choices: some form of excisional dermolipectomy and traditional liposuction. In most cases, liposuction alone addresses the excess fat, but it does not aesthetically improve the unclothed appearance of the upper arm due to residual postoperative skin laxity and postoperative contour irregularities.^(6,7,8)

Coincident with the dramatic rise in liposuction procedures, the aging “baby boomer” population, with decreasing skin tone and advanced laxity, were seeking body contour procedures. A technology that effectively allows the physician to remove and contour adipose tissue with less bruising, swelling, and pain while simultaneously providing for significant soft tissue contraction would enjoy popular appeal.^(2,6,9)

Liposuction was intended to remove localized fat deposits on the abdomen, hips, thighs, calves, arms, buttocks, back, neck, or face. Liposuction can be performed on more than one site. Liposuction was not intended to for weight loss instead of dieting and exercising. If you think you have localized stubborn fat sacs that do not respond to diet and exercise, to get rid of this potentially unattractive fat localization and make women feel and look better they did liposuction.^(10,11,12)

Radiofrequency devices are another possible option for improving skin tightness through stimulation of collagen remodeling. A multipolar polar device uses a single contact location for the area of origin of the electric current. That current then diminishes as it flows to a remote grounding pad. A bipolar device has two local electrodes so there is not a path of current through the body.^(11,14,15)

Radio frequency treatment appears to be beneficial for flabby arms after liposuction. Recent evidence showed that devices that heat the skin and tightened it; in the absence of histologic evaluation, it is reasonable to assume that this is the mechanism by which radio frequency improves collagen remodeling. Further investigations, including skin fold examination of treated skin, will be necessary to determine the mechanism of action. ^(1,5,6,12)

2. Material and Methods

Subjects:

Forty female patients suffering from flabby arms after liposuction, their age ranged from 22 to 45 years, and they were selected from general surgeries departments of the teaching hospitals. Patients were not familiar with the technique of the radiofrequency therapy; they were divided equally in number into two groups. They were received the radiofrequency therapy after liposuction for the study group and the liposuction surgical procedure only for the control group. All patients were received the routine medical and nursing care as well as the routine physical therapy.

Instrumentation:

In this study (**Radiofrequency equipment**), which is an advanced apparatus for the application of an energy to the subcutaneous adipose tissue and subdermal skin surface. Its multipolar technology sends multi-RF energy with a power of 250 W into dermis layer for collagen remodeling and also for fat dissolving. Preliminary clinical results, thermal monitoring and histological biopsies of the treated tissue demonstrate rapid preaspiration liquefaction of adipose tissue, coagulation of subcutaneous blood vessels and uniform sustained heating of tissue. ^(1,5,16,17)

Procedures:

Evaluation:

1-Tape measurement: An Erchonia body tape measure made in USA was used in measuring the upper Arm circumference measurement (ACM) in cm at the largest point of the biceps muscle via a plastic tape measurement. ^(1,17)

2-Skin fold caliper:

The thigh skin fold in cm via a skin fold caliper. It made in Italy, which is Accurate to +/- one millimeter, tips pivot automatically for parallel measurement, easy to read scale measures skin folds up to 60 millimeters, and low friction bearings on all critical pivot points. Accu-measure fitness 3000 is used to assess the change in the thickness of a fold of a skin on the back skin of the upper arm skin fold (ASF) between the elbow and shoulder. Measurements were conducted before starting the treatment as a first record and at the end of

the second month of treatment (2 sessions weekly) as a second final record. ^(5,16)

Treatment:

From sitting position or supine position, the electrode of the RF equipment delivers energy to the skin and monitors the skin's temperature for duration of 10 minutes per session, twice weekly for 2 months. After arm liposuction, subjects of the study group were irradiated with RF of a frequency of 0.5 MHz with a power range of 250 W. ^(5,11,12)

Data analysis:

Arm circumference measurement (ACM) in cm and the arm skin fold (ASF) in cm were measured before starting the treatment and after 2 months of treatment in both the study and control groups. Collected data were fed into computer for the statistical analysis; descriptive statistics as mean, standard deviation, minimum and maximum were calculated for each group. The t-test was done to compare the mean difference of the two groups before and after application and within each group. Alpha point of 0.05 was used as a level of significance. ¹⁸

3. Results:

As shown in table (1) and figure (1), the mean value of the ACM before treatment was (44.06±4.33) cm in the study group, while after treatment was (36.35±4.12) cm. These results revealed a highly significant reduction in ACM ($P<0.05$). While in the control group, the mean value of the ACM before treatment was (44.09±5.77) cm, while after treatment was (40.14±5.70) cm. These results revealed only significant decrease in the ACM ($P<0.05$).

Also, as shown in table (2) and figure (2), the mean value of the ASF before treatment was (6.61 ± 1.45) cm in the study group, while after treatment was (3.08± 0.54) cm. These results revealed a highly significant reduction in ASF ($P<0.05$), while in the control group, the mean value of the ASF before treatment was (6.59±1.34) cm, while after treatment was (4.65±0.62) cm, these results revealed only significant decrease in the ASF ($P<0.05$).

Table (1): Comparison of the mean values of ACM before and after treatment in both groups

	Before treatment		After treatment		P.value
	Mean	±SD	Mean	±SD	
Study group	44.06	4.33	36.35	4.12	< 0.05
Control group	44.09	5.77	40.14	5.70	< 0.05

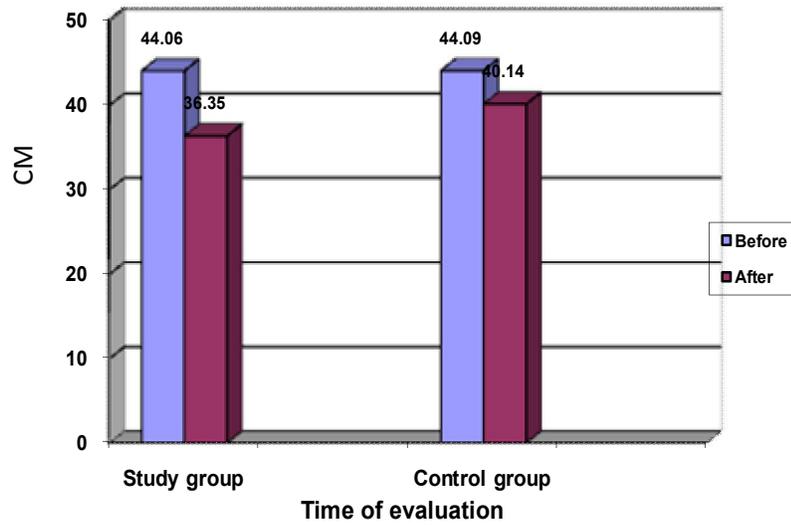


Fig (1): Mean values of the ACM before and after treatment in both groups.

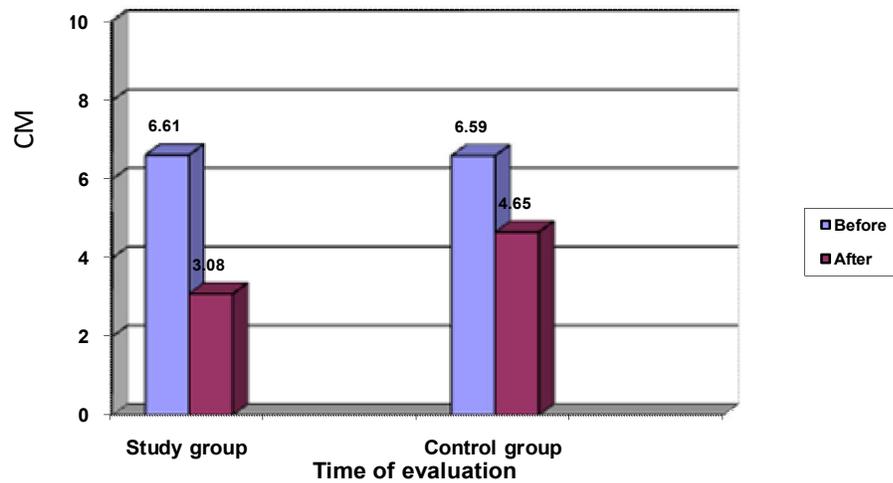


Fig (2): Mean values of the ASF before and after treatment in both groups.

Table (2): Comparison of the mean values of ASF before and after treatment in both groups

	Before treatment		After treatment		P.value
	Mean	±SD	Mean	±SD	
Study group	6.61	1.45	3.08	0.54	<0.05
Control group	6.59	1.34	4.65	0.62	<0.05

4. Discussion:

Obesity is the common problem and it is characterized by the increase in the fatty mass in the body. There will be marked increase in the weight of the affected person. It can occur due to many causes such as increased intake of food, lack of physical

activity, genetic factors. Obesity can be prevented by changes in food habits and regular exercise. Obesity is the risk factor for hypertension, diabetes mellitus, atherosclerosis, coronary artery diseases and many other diseases. (8,9,20)

Liposuction is a cosmetic plastic surgical procedure that sculpts and shapes the contours of the body by removing fat deposits from under the skin using vacuum suction cannula. Liposuction was intended to remove localized fat deposits on the abdomen, hips, thighs, calves, arms, buttocks, back, neck and face. (1,3,5)

Liposuction can be performed on more than one site. Recent evidence showed that some therapeutic

devices that heat the skin is tightened in the absence of histological evaluation, radiofrequency treatment approach appears to be beneficial for flabby arms after liposuction. ^(8,9,19,20)

Successful liposuction surgery begins with appropriate patient selection'. This statement shows the responsibility of the practitioner. It is his duty to recognize suitable patients and accurately establish the indication even in the case of 'purely' cosmetic improvement. A thorough evaluation covers all the usual risk factors for surgical procedures such as medications taken or systemic illnesses and contraindications, as well as a physical examination and laboratory tests. The liposuction surgeon should consider two aspects: localization and distribution of fat deposits, and skin turgor. ^(8,19,20)

Radio frequency application for body contour procedure is an energy applied to the subcutaneous adipose tissue and subdermal skin surface. Preliminary clinical results, thermal monitoring, and histologic biopsies of the treated tissue demonstrate rapid preaspiration liquefaction of adipose tissue, coagulation of subcutaneous blood vessels, and uniform sustained heating of tissue. ^(8,9,20)

Radio frequency (RF) is electromagnetic radiation in the frequency range of 3-300GHz. The primary effects of RF energy on living tissue are considered to be thermal. The goal of the new devices based on these frequency ranges is to heat specific layers of the skin. The directed use of RF can induce dermal heating and cause collagen degeneration. Wound healing mechanisms promote the remodeling of collagen and wound contraction, which ultimately clinically enhances the appearance of mild to moderate skin laxity. Preliminary studies have reported efficacy in the treatment of laxity that involves the periorbital area and jowls. Because RF energy is not dependent on specific chromophore interaction, epidermal melanin is not at risk of destruction and treatment of all skin types is possible. As such, radiofrequency-based systems have been used successfully for nonablative skin rejuvenation, atrophic scar revision and treatment of unwanted hair, vascular lesions and inflammatory acne. The use of RF is becoming more popular, although a misunderstanding exists regarding the mechanisms and limitations of its actions. ^(12,19)

The findings of the present study showed non-significant differences in the pre-treatment records of the ACM between the mean values of the study and the control groups. As well as in the pre-treatment records of the ASF, between the mean values of both groups.

Results of the study group revealed a highly significant reduction in the mean values of ACM and ASF, after the radio frequency application, when compared against the pre-application results.

Only significant decrease was recorded between the mean values of ACM and ASF in the control group after the liposuction, when compared against the pre-application results.

Significant differences showed in the study and control groups were consistent with those observed and recorded by (1,3,6,8,9,10,11,12,13,14)

Results of this study support the expectation that application of both radiofrequency therapy and liposuction had valuable effects on flabby arms in females as evidenced by the highly significant decreases in ACM and ASF. But radiofrequency therapy after liposuction was more fruitful than the liposuction alone.

Conclusion:

Both radiofrequency therapy and liposuction had valuable effects on flabby arms in females as evidenced by the highly significant decreases in ACM and ASF. But radiofrequency therapy after liposuction was more fruitful than the liposuction alone.

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