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# Radiofrequency associated with manual lymphatic drainage in facial rejuvenation

Radiofrecuencia asociada con drenaje linfático manual en rejuvenecimiento facial

Radiofrequência associada à drenagem linfática manual no rejuvenescimento facial

## ABSTRACT

**Objective:** To verify the effectiveness of radiofrequency associated with manual lymphatic drainage in facial rejuvenation. **Methods:** This was a longitudinal and interventional study conducted in the laboratory of the Aesthetics and Cosmetics Course of the University of Fortaleza (UNIFOR) from August to October 2019. Participants were recruited based on a database, totaling a sample of 4 volunteers and 8 sessions. Data were collected through evaluation form, comparative photos in order to verify the results obtained with the treatment. The research was approved by the Ethics Committee of the UNIFOR under opinion number 3,570,017. **Results:** There was improvement in the aspects of the skin such as improvement of the facial contour, hydration, furrow filling, lines. And reduction of facial edema. **Conclusion:** The use of radio frequency associated with Lymphatic drainage was beneficial in skin aging. It is suggested that one more volunteers and sessions are held in order to achieve even more results most significant.

**DESCRIPTORS:** Radiofrequency. Manual Lymphatic Drainage. Aging.

## RESUMEN

**Objetivo:** Verificar la efectividad de la radiofrecuencia asociada al drenaje linfático manual en el rejuvenecimiento facial. **Metodología:** Este fue un estudio longitudinal e intervención en la Universidad de Fortaleza (UNIFOR) de agosto a octubre de 2019. Las participantes fueron reclutadas a partir de una base de datos, totalizando una muestra de 2 voluntarios y 8 sesiones. Los datos fueron obtenidos a través de un formulario de evaluación, fotos comparativas con el fin de verificar los resultados obtenidos con el tratamiento. La investigación fue aprobada por el Comité de Ética de UNIFOR con el número de opinión 3.570.017. **Resultados:** Se observó mejora en los aspectos de la piel como, mejora del contorno facial, hidratación, relleno de surcos, líneas y reducción del edema facial. **Conclusión:** El uso de radiofrecuencia asociado al drenaje linfático demostró ser beneficioso en el envejecimiento cutáneo. Se sugiere que se realicen más voluntarios y sesiones para obtener resultados aún más significativos.

**DESCRIPTORES:** XX

## RESUMO

**Objetivo:** Verificar a efetividade da radiofrequência associada a drenagem linfática manual no rejuvenescimento facial. **Métodos:** Tratou-se de um estudo do tipo longitudinal e de caráter intervencionista na Universidade de Fortaleza (UNIFOR) no período de agosto à outubro de 2019. As participantes foram recrutadas de um banco de dados, totalizando uma amostra de 2 voluntárias e 8 sessões. Os dados foram coletados através de ficha de avaliação, fotos comparativas a fim de verificar os resultados obtidos com o tratamento. A pesquisa foi aprovada pelo Comitê de Ética da UNIFOR sob número de parecer 3.570.017. **Resultados:** Notou-se melhora nos aspectos da pele como, melhora do contorno facial, hidratação, preenchimento de sulcos, linhas e redução de edema facial. **Conclusão:** O uso da radiofrequência associada a drenagem linfática mostrou-se benéfico no envelhecimento cutâneo. Sugere-se que um maior número de voluntários e sessões sejam realizadas a fim de obter resultados ainda mais significativos.

**DESCRIPTORES:** Radiofrequência. Drenagem Linfática Manual. Envelhecimento.

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**INTRODUCTION**

**A**ging can affect any tissue in the human body, so it is a natural event. The signs of aging appear earlier on the face than in other areas of the body.<sup>1</sup>

There is a great search for means that provide rejuvenation, thus favoring a good quality of life. Collagen fiber is a fundamental element of connective tissue and gradually becomes more rigid with age, as does elastin, which has its number of elastic fibers and other components of connective tissue reduced, leading to loss of its elasticity.<sup>2</sup>

According to Silva et al,<sup>3</sup> with the loss of collagen, elastin and tissue fat, changes occur due to skin aging with age, allowing the appearance of wrinkles, expression lines and sagging.

According to Lofeu et al,<sup>4</sup> some protocols can be used to improve the appearance of skin aging. Radiofrequency (RF), for example, is concep-

tualized by the emission of an electromagnetic wave that generates heat by conversion, having a frequency between 30 KHz and 300 MHz, being between 0.5 and 1.5 MHz the most used frequency.

The deepest tissues are reached by this type of heat provided by the RF, in which energy and heat are generated in the innermost layers of the skin. This heat causes the contraction of existing fibers and the stimulation of the formation of new ones, improving the support of the skin due to the greater efficiency generated.<sup>5</sup>

When an increase in subcutaneous temperature is promoted, an increase in blood circulation is generated, a decrease in the high concentration of toxins, causing oxygenation to improve considerably. In addition, this heating promotes an increase in metabolism, an instantaneous tensio-ning effect on the skin, generated by stimulating the contraction of fibers and toning the skin.<sup>6</sup>

According to Tagliolatto<sup>7</sup> the effect obtained by neocolagenogenesis is caused above 40 ° C, in which the heat generated by the radiofrequency stimulates the collagen retraction, causing an improvement in the firmness and elasticity of the skin. Heating is also capable of inducing the activation of fibroblasts, triggering neocolagenization (altered in diameter, thickness and periodicity), with consequent remodeling of the tissue.

In addition to the positive results and the immediate effect generated by the radio frequency, the analysis for the final result should not be based and limited only at the end of the visits, since when the thermal stimulus is carried out at an appropriate temperature, the collagen remains in restructuring process, even after six months of generated stimulus.<sup>8</sup>

Some features together with radiofrequency promote improvement in mature skin, which can enhance the effect caused by the de-

vice, and the desired results are often faster. Some of these resources are manuals, such as manual lymphatic drainage (MLD).

According to Almeida <sup>9</sup> the MLD is a therapeutic means of gentle maneuvers, without much pressure, slow and rhythmic towards the lymphatic vessels and lymph nodes, with repetitive movements. It has the intention of draining the excess of accumulated liquids between the interstitial spaces, it is responsible for the water balance, being of great importance in the removal of waste coming from the cellular metabolism.

It is a mechanism that assists the lymphatic system in the dynamism of drainage, removing metabolic waste, benefiting the exchange of oxygen and nutrients, and contributing to the filtration and reabsorption of proteins in the lymphatic capillaries. Its physiological effects are quite variable, in addition to the increase and reabsorption of proteins and the speed of lymph, it promotes an aid in the distribution of hormones and drugs throughout the body, acts in muscle relaxation and emphasizes immune defense. <sup>9</sup>

Given the above, the objective was to verify the effectiveness of radio frequency associated with manual lymphatic drainage in facial rejuvenation.

## METHOD

It was a longitudinal and interventionist study, carried out in the laboratory of the Course of Aesthetics and Cosmetics at the University of Fortaleza, located at Av. Washington Soares, n° 1321, Edson Queiroz, Fortaleza / CE.

The collection period was from August to October 2019 with a random population, based on a database of the referred course, so that 2 women aged between 50 and 60 years were selected according to the dysfunction under study for treatment.

**Initially, they signed the Informed Consent Term (ICF), after clarifying the research objectives. Then, they underwent a facial evaluation, with data referring to general health, lifestyle, daily skin care and specific questions about the volunteers' skin.**

The inclusion criteria to be part of the research were women who had skin aging, wrinkles and facial flabbiness, justifying the time frame. Women who used facial cosmetics (except sunscreen) and not fit to use radiofrequency were excluded from the study (people with pacemakers, pregnant women, lactating women, diabetics, with thyroid, endocrine problems, history of thrombosis, cancer and those who use corticosteroids).

Initially, they signed the Informed Consent Term (ICF), after clarifying the research objectives. Then, they underwent a facial evaluation, with data referring to general health, lifestyle, daily skin care and specific questions about the volunteers' skin.

Subsequently, photographs were taken in anterior view, left profile and right profile, with a blue background color, a distance of half a meter from the patient, using the camera of an Iphone 7 Plus (Apple) for the previous registration of the treatment and final registration in order to compare the results.

The consultations took place weekly, through the following steps: cleaning with soap based on glycolic acid; toning with facial tonic lotion; application of glycerin to start the use of bipolar Hooke radiofrequency (of the brand Ibramed<sup>®</sup>), with the temperature of 38 ° C to 40 ° C, for another 3 minutes after reaching the expected temperature; manual lymphatic drainage using a facial massage cream; ending with application of sunscreen with sun protection factor SPF 60. After 6 visits, the participants were reassessed.

The data were analyzed using comparative photos (initial registration and after the last visit) and the volunteers' reports.

The research was approved by the Ethics Committee of the University of Fortaleza (COÉTICA) under Opinion No. 3.570.017 and by the Certificate of Presentation for

Ethical Appreciation (CAAE) No. 18945419.7.0000.5052.

## RESULTS

The data will be presented by means of case reports to facilitate the understanding of the findings.

### Volunteer 1:

J.C.S.O, 58 years-old, female, lawyer, married, reports as the main complaint the presence of flaccidity and wrinkles in the facial region, making her dissatisfied with the skin, and consequently stressed and worried. Takes medications to control pre-diabetes (Glifage 500mg), denies smoking and drinking. The volunteer reported not having allergic reactions to cosmetic substances and does not use a pacemaker, pin or platinum.

In the initial evaluation it was verified that the volunteer had phototype V, flaccidity, glabellar, frontal, periorbicular, wrinkles and nasogenian grooves (Figure 1).

After 6 visits, there was a softening of the tissue in the treated region, such as improvement in skin texture, brightness, reduction of nasogenian sulcus ptosis, reduction of expression lines, improvement in skin tone and whitening in the treated region.

When asked about the results of the proposed treatment, she reported:

*“I really liked the treatment, I feel my skin more hydrated, firmer and clearer, even my husband asked what I was doing on my skin, which was younger. I was very happy.” (J.C.S.O, 58 years-old).*

### Volunteer 2:

R.A.P, 54 years old, female, teacher and consultant, married, reports as main complaint expression lines and wrinkles, where it became more apparent after the age of 30, causing her to

**After 6 visits, there was a softening of the tissue in the treated region, such as improvement in skin texture, brightness, reduction of nasogenian sulcus ptosis, reduction of expression lines, improvement in skin tone and whitening in the treated region.**

put botox in the frontal region. Takes medications to control hypertension (Ablak 25mg and Trezor 20mg), denies smoking and drinking. The volunteer reported not having allergic reactions to cosmetic substances and does not use a pacemaker, pin or platinum.

In the initial evaluation, it was verified that the volunteer had phototype I, flaccidity, periorbicular wrinkles and nasogenian grooves (Figure 2)

After 6 visits, there was a softening of the tissue in the treated region and an improvement in the skin texture.

The volunteer was asked about her satisfaction with the results of the proposed treatment, she reported:

*“I noticed an improvement in the expression lines, and I also felt my skin firmer. I wanted to do more sessions for the result to be even better.”(R.A.P, 54 years-old).*

## DISCUSSION

In this study with 2 volunteers for the treatment of facial rejuvenation with the use of radiofrequency associated with manual lymphatic drainage, it was noted that there was a significant improvement in the skin, in which they obtained a filling aspect, greater tissue hydration, illuminated skin, with reports of clearing by volunteers. There was also an improvement in expression lines, attenuation of deeper wrinkles and tissue flaccidity, with a decrease in the edema on the volunteers' faces.

Similar results were observed in a research made up of ten women aged 45 - 60 years, living in Tubarão / SC, in which only 2 facial radio frequency sessions were performed with an interval of 15 days, it was reported that radio frequency is a safe and effective procedure to improve facial flaccidity, showing excellent results. It is considered a healthy alternative to improve facial aesthetics,

generating visible results, both physical and psychological.<sup>6</sup>

A study carried out with volunteers between 50 and 60 years old found that there was a significant difference before and after frontal wrinkles, with a reduction of 20% in the number of wrinkles in the experimental group. These findings corroborate this study in which there was also a reduction in facial wrinkles.<sup>10</sup>

A research carried out in Paraíba / PB with 14 elderly women using radiofrequency in wrinkles in the periorbicular region, showed that the volunteers were satisfied with the results of the technique, reinforcing the findings of the present study.<sup>11</sup>

In another study conducted in Vitória da Conquista / BA, the volunteers reported an improvement in the texture of the skin as a whole, improving brightness, texture and facial tone. Five of these volunteers, aged

35 to 55, also confirmed benefits in the general aspect of the volunteers' skin, reduced wrinkle depth and improved flaccidity in the lateral region of the face.<sup>12</sup>

Results are also observed in smokers and non-smokers, who reported that the use of radiofrequency was able to decrease wrinkles in the periorbicular region and reduce sagging in the mouth region, in addition to minimizing the depth of wrinkles and skin whitening.<sup>13</sup>

In association with the results presented, lymphatic drainage deserves mention because it has the benefits of increased hydration and cellular nutrition, reduced fluid retention, increased immunity, detoxification of the organism, activation of blood circulation. These data are confirmed with those presented in this study, in which they reported a reduction in facial edema.<sup>14</sup>

## CONCLUSION

Through the findings, it is clear that skin aging can occur due to the influence of extrinsic and intrinsic factors in all individuals.

It was noted that there was an improvement in the appearance of the skin, both in hydration and in filling, which allowed the volunteers a considerable satisfaction in relation to the face.

The radiofrequency treatment proved to be effective for stimulating collagen and associated with lymphatic drainage to decrease fluid retention in the treated region.

No studies have been found in the literature that combine the two techniques with regard to facial rejuvenation. It is suggested that further studies be carried out, both with more assistance, as well as a greater number of individuals, in order to obtain more expressive and considerable results. ■

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## APENDIX A

Figure 1 - Photograph of the anterior view of the volunteer's face, J.C.S.O, 58 years old, record of before and after 6 research sessions with the application of Radiofrequency and Manual Lymphatic Drainage for facial rejuvenation. Fortaleza - CE, 2019.



Source: Collection of researchers.

Figure 2 - Photograph of the right profile of the volunteer's face, J.C.S.O, 58 years old, record of the before and after the 6 research sessions with the application of Radiofrequency and Manual Lymphatic Drainage for facial rejuvenation. Fortaleza - CE, 2019.



Source: Collection of researchers.

Figure 3 - Photograph of the left profile of the volunteer's face, J.C.S.O, 58 years old, record of before and after the 6 research sessions with the application of Radiofrequency and Manual Lymphatic Drainage for facial rejuvenation. Fortaleza - CE, 2019.



Source: Collection of researchers.

Figure 4 - Photograph of the anterior view of the volunteer's face, R.A.P, 54 years old, record of before and after the 6 research sessions with the application of Radiofrequency and Manual Lymphatic Drainage for facial rejuvenation. Fortaleza - CE, 2019



Source: Collection of researchers.

Figure 5 - Photograph of the right profile of the volunteer's face, R.A.P, 54 years old, record of before and after the 6 research sessions with the application of Radiofrequency and Manual Lymphatic Drainage for facial rejuvenation. Fortaleza - CE, 2019.



Source: Collection of researchers.

Figure 6 - Photograph of the left profile of the volunteer's face, R.A.P, 54 years old, record of before and after the 6 research sessions with the application of Radiofrequency and Manual Lymphatic Drainage for facial rejuvenation. Fortaleza - CE, 2019



Source: Collection of researchers.