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Female Intimate Harmonization – Treatment of Vulvar Sagging with Plate Cryolipolysis

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Abstract: *The search for minimally invasive procedures for rejuvenation and improvement of sagging in the genital region has grown significantly in recent years. Among the emerging technologies, the use of plate cryolipolysis associated with microcurrent has stood out as an innovative approach for the treatment of sagging. We seek to validate the safety and efficacy of the technique in external labial sagging, contributing to the advancement of intimate rejuvenation techniques.*
Objective*: Objective: The search for minimally invasive procedures for rejuvenation and improvement of sagging in the genital region has grown significantly in recent years. In this study, we searched the literature on the cryolipolysis technique using a mobile handle in the female intimate region with the aim of reducing adipose tissue and toning the dermis, with the presentation of clinical cases.*
Results: *The use of the cryotonus technique and the mobile handle technique are effective in the treatment for reducing adipose tissue in the pubic region and activating fibroplasty, generating dermal toning for vulvar sagging.*
Conclusion: *Vulvar sagging is a natural aging process, but it can be accelerated by hormonal, genetic and lifestyle factors. Early recognition of the signs allows the adoption of preventive and therapeutic strategies to maintain the health and aesthetics of the intimate region. Advances in aesthetic gynecology allow innovative approaches, such as the cryolipolysis technique of plates associated with microcurrents, to restore the firmness and tone of the vulva, promoting functional and aesthetic improvements for patients. Criotonus is effective and has clinical and histological evidence. The principle behind the technique is based on the activation of the PERK crystal formation system, in thermal shocks that activate both apoptosis through the generation of free radicals that generate lipid peroxidation and the activation of HSP 47, which differentiates fibroblasts into collagen. This technique promotes collagen contraction, stimulates neocollagenesis and improves tissue firmness, offering an effective and safe alternative for patients seeking natural and long-lasting results.*
Key words: cryoliolysis, adipose tissue, intimate harmonization, gynecology, vulva sagging, skin sagging

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I. Introduction

The aging of female vulvar tissue is related to hormonal, genetic and environmental factors, which directly influence skin thickness, tone, vascularization and the quality of the extracellular matrix in the intimate region. In particular, the drop in estrogen levels during menopause leads to mucosal atrophy, reduced elasticity, loss of volume in the labia majora and decreased tissue hydration, affecting not only aesthetics but also the woman's quality of life (Moleiro, 2025).

With the advancement of intimate aesthetics, new treatments have been developed to meet this growing demand, especially among women seeking non-surgical alternatives to restore the youthful and healthy appearance of the vulva. Among these technologies, plate cryolipolysis using the mobile handle technique associated with microcurrents stands out for generating excellent anti-inflammatory results, promoting thermal contraction and collagen remodeling, without damaging the skin surface.

The Criotonus protocol consists of the specific application of plate cryolipolosis associated with microcurrent in areas of dermal sagging and adipose tissue, demonstrating effective clinical results in the vulvar region, aiming to stimulate fibroblasts and regenerate tissues. This procedure is effective in improving vulvar

sagging, external skin texture and overall firmness, and is indicated for women at all stages of life, including the post-menopausal period.

The aging process of the vulva involves progressive structural changes that affect female aesthetics, function, and well-being. The main factors involved include decreased estrogen levels, especially during and after menopause, and the decline in cell renewal and collagen and elastin production, leading to atrophy of the skin and mucosa, loss of volume, dryness, and sagging in the region (Moleiro, 2025).

The most affected structures include the labia majora, which suffer loss of fat and collagen, becoming thinner and less supported, and the skin of the vulva, which acquires a thinner, flaccid texture and reduced vascularization. In addition, there is a compromise in hydration, mucosal protection, and sensitivity, which impacts female self-esteem and sexuality (Moleiro, 2025).

The increased demand for treatments that promote non-invasive vulvar rejuvenation reflects women's desire for resources that improve intimate aesthetics, respecting their health and functionality, with rapid recovery and safety.

Sagging Vulvar Skin: What It Is, Causes, Onset, and Factors That Influence Its Progression
What is Vulvar Sagging?

Sagging vulvar skin refers to the progressive loss of firmness and support of the tissues, in addition to the reduction of the harmonious volumization of the vulvar region, which includes the labia majora and minora or outer and inner labia. This process is related to the decrease in collagen, elastin, and hyaluronic acid in the skin and connective tissue of the region, as well as the decrease in subcutaneous tissue, which provides a protective anatomy to the urethral and vaginal introitus, leaving the aforementioned area more exposed to the environment, facilitating contamination and the migration of microorganisms that can alter the vaginal flora and weaken the immune system of the intimate region. This condition can affect both the aesthetics and functionality of the vulva, and can generate discomfort, irritation, and even dissatisfaction with the intimate appearance (Moleiro, 2015).

Causes of Vulvar Sagging

Sagging of the vulva can be caused by a number of factors, including natural aging, hormonal changes, and external conditions that affect the integrity of the tissue (Frota, 2023). The main causes include:

Natural Aging

Over time, there is a reduction in the production of collagen and elastin, proteins essential for the firmness and elasticity of the skin and connective tissue.
Decrease in the natural hydration of the skin, making it thinner and less resistant to traction.
In addition, there is a slowdown in cellular metabolism, which compromises tissue renewal and the skin's ability to repair itself. The reduction in hormone levels, especially estrogen, plays a fundamental role in this process, as it directly impacts the vascularization and nutrition of the intimate region. These changes can result in greater sensitivity (discomfort), dryness, and predisposition to irritation, affecting both the health and comfort of women (MCNEIL, 2021).

Hormonal Changes (Menopause and Postpartum)

During menopause, the drop in estrogen levels causes histological and anatomical changes in urogenital tissues, leading to loss of vaginal elasticity, increased pH, changes in vaginal flora, decreased lubrication, and greater vulnerability to irritation and physical trauma.
In the postpartum period, in addition to the stretching of tissues during childbirth, hormonal changes that occur during pregnancy and postpartum can affect muscle tone in the pelvic region, contributing to vulvar flaccidity.
The drop in estrogen levels, especially during menopause, reduces the thickness and elasticity of the vaginal and vulvar epithelium.
In the postpartum period, tissue stretching and possible decreased lubrication can accelerate the loss of tone.
These hormonal changes can affect both the aesthetics and functionality of the vulva, and can cause discomfort, irritation, and even dissatisfaction with intimate appearance. (MCNEIL, 2021).

Excessive Weight Loss and Skin Aging

Sudden weight loss can lead to a reduction in the volume of fat in the labia majora, resulting in a sagging appearance.
The skin also undergoes a process of ptosis (drooping), worsening sagging (dos Anjos, 2024)

Genetic Factors and Personal Predisposition
Some women have a genetic predisposition to less connective tissue support, making them more prone to early sagging.

Mechanical Factors and Lifestyle Habits
Gravity and postural aging
Over time, gravitational force contributes to the descent of tissues.
In addition, the continuous action of gravity associated with biomechanical changes and inadequate posture over the years can contribute to progressive tissue ptosis. The reduction in muscle tone, especially in the pelvic floor muscles, compromises the support of the anatomical structure, favoring the displacement of tissues. Factors such as decreased physical activity, changes in the distribution of body mass and changes in the composition of collagen and elastin intensify this process, impacting both the structural integrity and the functionality of the vulvar region (Rohden, 2024).
Excessive use of tight clothing
Can compromise blood circulation and affect the quality of the skin and tissues, and prolonged use of tight clothing can increase temperature and humidity in the intimate region, favoring an imbalance in the local microbiota and impairing tissue oxygenation. In the long term, this restriction can negatively impact the elasticity and integrity of the vulvar skin.
Smoking
Reduces skin vascularization and accelerates the process of collagen degradation, compromising tissue oxygenation. Smoking stimulates the release of free radicals, intensifying oxidative stress and accelerating the degradation of collagen and elastin fibers. This results in thinner, less resistant skin that is more prone to sagging.
Sedentary lifestyle
Lack of physical activity compromises not only blood circulation, but also cellular nutrition and the elimination of toxins in the pelvic region. The progressive weakening of the pelvic floor muscles can lead to reduced support of the vulvar tissues, worsening the loss of tone.
Pregnancy and Vaginal Delivery
During pregnancy, the tissues of the vulva and vagina stretch to accommodate fetal growth.
Vaginal delivery can lead to loss of tonicity of the vulvar tissues due to the stretching of the collagen fibers, which can cause lacerations (tears) of the tissue. (Barbosa, 2005)

How Does Vulvar Sagging Begin?
The process of vulvar sagging can begin subtly and progress over the years. The first signs may include:
Loss of volume in the labia majora, making them less full;
Skin that appears less firm, with more evident wrinkles or creases;
Sensation of looseness or less support in the tissues of the intimate region;
Increased sensitivity or discomfort in contact with underwear and during sexual intercourse, due to less skin protection.

Factors that Influence the Progression of Vulvar Sagging
The speed and intensity of the progression of vulvar sagging depend on multiple factors, including:

Age and Hormonal Changes
After the age of 30, collagen production begins to decrease.
After menopause, there is an acceleration of the loss of collagen and hydration in the skin of the vulva.
External Factors and Lifestyle Habits
Unprotected sun exposure can degrade collagen and affect skin elasticity.
Smoking and excessive alcohol consumption affect the vascularization and nutrition of tissues.
Changes in Weight and Body Composition
The yo-yo effect contributes to the degradation of connective tissue and loss of firmness.
Lack of Stimulation of Collagen Production
The absence of treatments or habits that stimulate collagen renewal can accelerate the process.
Mechanical Factors
The impact of high-impact physical activity without strengthening the pelvic floor can influence sagging.
Genetic Factors and Family Inheritance
Some women may have a greater genetic predisposition to premature sagging, regardless of their lifestyle (Amaral, 2024).

ANATOMY

Anatomy of the vulvar region

Anatomy of the Vulvar Region and Involved Structures

The vulvar region is composed of several anatomical layers that play essential roles in the protection, sensitivity and support of the region. Detailed knowledge of these structures is essential for the safe application of aesthetic and therapeutic procedures (Santos, 2025).Skin and Mucosa: The vulva is covered externally by keratinized skin in the region of the labia majora, with sweat and sebaceous glands. The mucosa, which predominates in the inner part of the labia minora and vaginal vestibule, is composed of non-keratinized squamous epithelium, which is highly vascularized and sensitive (Santos, 2025).

Connective Tissue and Fascia: Beneath the skin and mucosa, there is the underlying connective tissue, rich in elastic fibers and collagen, providing support and flexibility. Among the main fasciae of the region, Colles' fascia (continuation of the superficial perineal fascia) stands out, which contributes to the structural integrity of the vulva (Santos, 2025).

Muscular Support:

The muscular support of the vulvar region is formed by several layers, including:

• Bulbospongiosus muscle: surrounds the vaginal vestibule and contributes to sexual function and urinary continence.

• Ischiocavernosus muscle: assists in the erection of the corpora cavernosa of the clitoris.

• Superficial transverse perineal muscle: provides support to the pelvic floor.

• Levator ani muscle: important in stabilizing the pelvic and perineal region.

Vascularization and Innervation: The vascularization of the vulva is supplied mainly by the internal and external pudendal arteries, with branches directed to the region of the labia and clitoris. Venous return occurs through the pudendal veins, ensuring efficient vascular drainage. Sensory and autonomic innervation comes from the pudendal, ilioinguinal and genitofemoral nerves, and is essential for the sensitivity and physiological response of the area.

Understanding these anatomical layers is essential for the safe performance of minimally invasive interventions, such as the application of endolaser, allowing a precise approach and reducing the risk of damage to important structures (Santos, 2025).

• **Physiology of vulvar aging**

o Histological and biochemical changes associated with aging.

o Changes in the extracellular matrix, collagen and elastin.

cryolipolysis associated with microcurrents

The reduction of adipose tissue is energy-dependent and can be achieved by reducing fat stores (lipolysis) or by the permanent removal of adipocytes, necrosis and apoptosis (Ruiz-Silva, 2023). Lipolysis is a metabolic process that degrades triglycerides present in adipose cells into their constituent molecules, glycerol and free fatty acids (FFA), through hydrolysis. (Ruiz-Silva, 2023; 2024). Mobile gauntlet techniques associated with beta-adrenergic stimulation promote mitochondrial cristae biogenesis Beige adipose tissue is a game changer in the treatment of obesity and comorbidities due to its thermogenic and neurogenic effect (Martins; Ruiz-Silva, 2021; Ruiz-Silva, 2023; Ruiz-Silva; et al, 2024).

Cold stress or beta-adrenergic stimulation activate PERK, which phosphorylates N-acetylglucosamine transferase (OGT). OGT phosphorylates TOM70 at Ser94, increasing the import of the MIC19 protein into mitochondria, promoting cristae formation and respiration. This activates the transformation of white adipose tissue (with many lipids and few mitochondria) into beige adipose tissue (with few lipids and many mitochondria) (Ruiz-Silva; et.al, 2024)

The endoplasmic reticulum (ER) kinase PERK is extremely sensitive to cold stress and sympathetic nervous system (SNS) stimuli, promoting the formation of mitochondrial cristae by increasing TOM70-assisted mitochondrial import of MIC19 (Ruiz-Silva, 2023; 2024).

We activated the multiplication of healthy mitochondria without predominance of survival factors with anti-apoptosis proteins, through the cryolipolysis mobile handle, generating the activation of the MICOS cristae organization system, through the translocation of MIC19 and outer membrane translocation receptors 70. Beta-adrenergic stimuli also promote cristae biogenesis. The big secret is to change this mitochondrial characteristic through fission (Yau, 2020; Martins; Ruiz-Silva, 2021; Ruiz-Silva, 2023; 2023).

The association of cold with stimulation of the sympathetic nervous system through electrotherapy promotes activation of the PERK and MiCUS systems. The action of freezing and simulating physical activity

through microcurrent (release of hormones similar to physical activity) after lipolytic stimuli (electrolipolysis) encounters an environment with many lipid droplets that influence the organization of cristae; Mitochondria perform β-oxidation of fatty acids, but when stimulated by cold, drastic changes in morphology occur due to activation of PERK; (Gallardo-Montejano, 2021; Ruiz-Silva 2024).
The density of cristae increased dramatically after exposure to cold, forcing the overexpression of perilipin 5 (PLIN5); (Latorre-Muro et al., 2021). This increase in cristae density may be driven by ER-dependent stress. PERK, (Muro, 2021)
Microcurrents or TCM, Cellular Microtherapy consists of the application of low-intensity (μA) and low-frequency currents similar to the endogenous electric fields generated during tissue repair systems (Ruiz-Silva, 2006; 2016; Coy, 2022; Ofstead, 2020; Xu, 2021).

It has scientific evidence proven by several articles and meta-analyses (Ruiz-Silva; 2024)
In inflamed adipose tissue, there is a low concentration of endogenous electric current in the tissues, reducing the oxygen supply, decreasing the arrival of growth factors, oxygen generating hypoxia and inhibiting collagen synthesis (Ruiz-Silva, 2006; 2016; Xu, 2021; Coy, 2022).
Microcurrent compensates for the bioelectricity that is decreased in hypoxic and inflamed tissue (Ruiz-Silva, 2006; 2016; Xu, 2021; Coy, 2022) by generating ATP and Mitogenesis.
Microcurrent generates constant intensity current, increasing electrical flow, dissociating the water molecule, hydrogen and hydroxyl ions are formed around both electrodes. The hydrogen that leads to the creation of ATP, it follows that, as a residual effect after the microcurrent stimulator is turned off, ATP production continues at the site.
This formation of ATP can be explained through Mitchell's chemiosmotic theory (Cheng, 1985, Ruiz-Silva, 2016).

Ruiz-Silva in two theses prescribes 0.1 to 0.5 Hz with an intensity of 150 uA, from 40 minutes to 1 hour of application.
Current with an intensity of 150 μA, with a biphasic, symmetrical and balanced square waveform. (Ruiz-Silva, 2006; 2016). Promotes anti-inflammatory effects, oxygenates, increases collagen, toning the tissue and increases the number of mitochondria.
The main objective of the SNS is to stimulate the body's fight or flight response, while remaining constantly active to maintain homeostasis (Motiejunaite et al. 2021). microcurrent exerts "hormone-like effects", secretion of norepinephrine in the postganglionic sympathetic neuron of the nervous system and the G protein of the cell membrane (Al-Tubaikh 2018). Norepinephrine secretion increases, binding to the β3-adrenoreceptor (β3-AR), which in turn converts ATP to cAMP in adipocytes (Noites, 2017),
MCT induces lipolysis upon stimulation of the postganglionic sympathetic neuron (Piras, 2021; Vilarinho et al. 2022)

II. Material And Methods

Description of clinical case

Twenty-three female patients, aged between 30 and 55 years, were treated. They complained of sagging vulva and increased adipocyte volume in the pubic region, with clinical indication for cryolipolysis using a mobile handle. All patients were duly informed with the Free and Informed Consent Form, in addition to having signed an authorization for the use of their images, completed for diagnostic, scientific and educational purposes.

The equipment used in this study was cryolipolysis with plates of various brands, all registered with ANVISA.
The microcurrent used was the Phasys from KLD Biosistemas

The clinical sequence of the technique followed the following protocol:

1. Cleansing the area to be treated with 2% aqueous chlorhexidine

2. Use of antifreeze gel to protect the epidermis and dermis.

3. Use of plates in a mobile handle in 4 cycles of 5 minutes in the vulvar and pubic region, associated with the use of microcurrents.

The treatments were performed using the mobile plate cryolipolosis handle technique, with intervals for reperfusion. We used 4 series of 5 minutes of freezing with 2-minute intervals without massage, that is, reperfusion without injury.

III. Results

The association of cold with stimulation of the sympathetic nervous system through microcurrents promotes the activation of the PERK and MICUS systems. The action of freezing and microcurrents promotes the release of hormones similar to physical activity, after lipolytic stimuli (electrolipolysis) encounters an environment with many lipid droplets that influence the organization of the ridges; the mitochondria perform the β-oxidation of fatty acids, but when stimulated by cold, drastic changes occur in morphology due to the activation of PERK; (Gallardo-Montejano, 2021).

Mobile cryolipolysis promotes the selective reduction of adipose cells and is effective in the treatment of localized fat and dermal sagging through the remodeling of dermal collagen. Histological analysis confirmed a selective and gradual reduction of adipose tissue by programmed death (apoptosis) triggered by reperfusion. The safety of the method is highlighted by the absence of significant increases in liver enzymes or serum lipids. Molecular studies have not demonstrated changes in the transcripts of the peroxisome proliferator-activated receptor (PPAR). No changes in the transcripts were evidenced, which reinforces the safety of the technology used (Ferraro, 2012). In our case study, the patients were satisfied with the results, as demonstrated in the photos

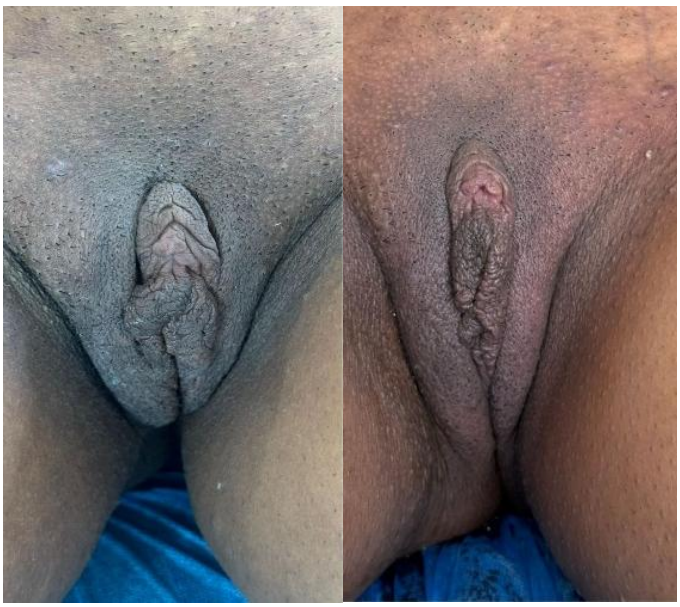

photo 1: patient 49 years, 2 pregnancies Dr. Vanessa Machado

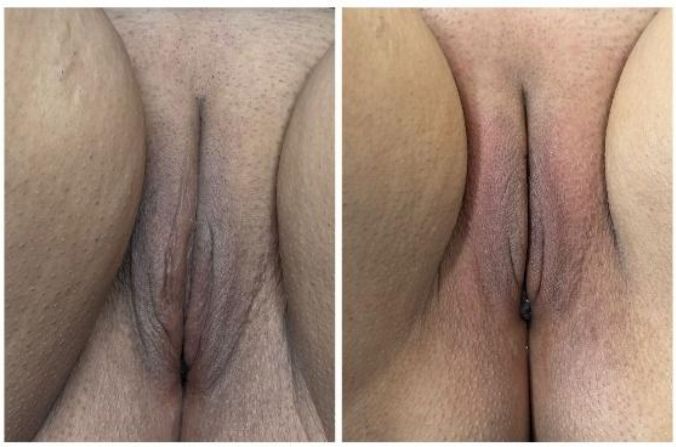

photo 2: patient 44 years, 2 pregnancies, Dr. Vanessa Machado

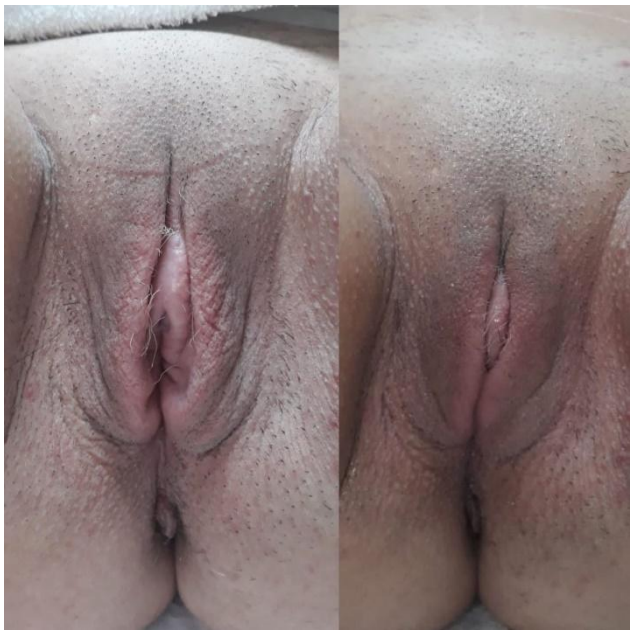

photo 3: patient 49 years, 2 pregnancies , Dra Daniela Moleiro.

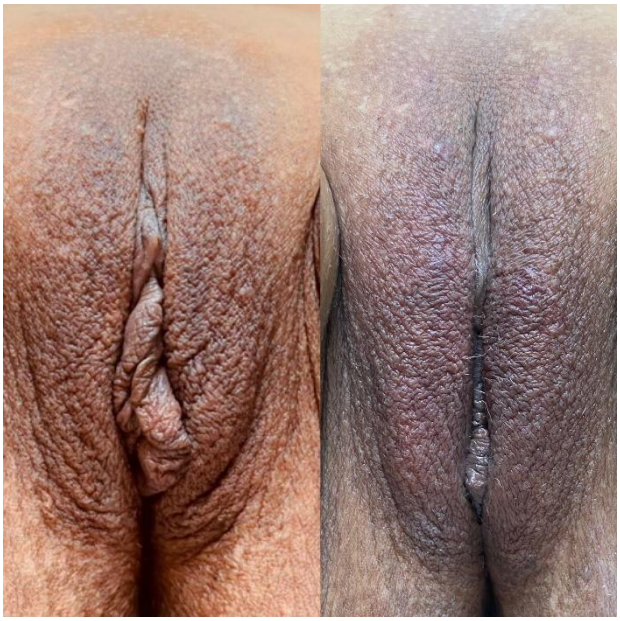

photo 4: patient 48 years, 1 pregnancies , Dra Daniela Moleiro.

photo 5: patient 45 years, 1 pregnancies , Dra Daniela Moleiro.

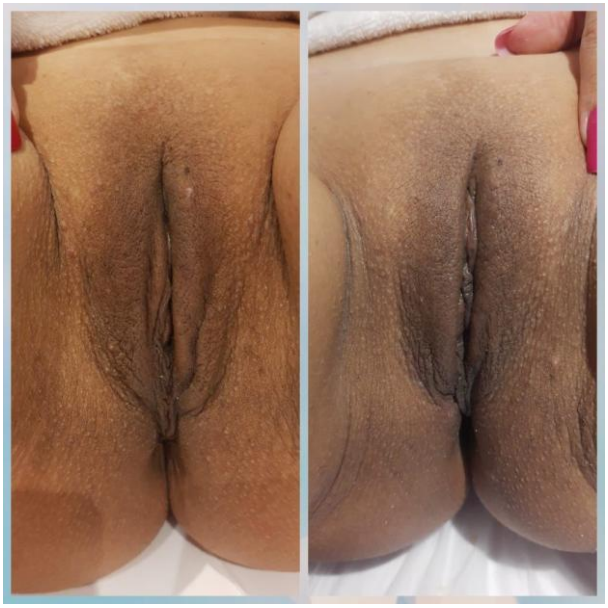

photo 6: patient 37 years, 1 pregnancies , Dra Daniela Moleiro.

IV. Discussion

Membrane lipoperoxidation and the onset of apoptosis regulate P53, BAX and BCL-2. In cryolipolysis, there is an increase in H2O2 during reperfusions, as well as the activation of superoxides - an abrupt increase in O2, with the generation of a large amount of hydroxyl, the superoxides undergo dismutation by SOD, receiving one more hydrogen to become a hydroxyl radical, which activates RTNF, activating apoptosis. The increase in the concentration of malondialdehyde, myeloperoxidase and H2O2 generates lipid peroxidation and oxidative stress (Ruiz-Silva, 2023). Lipids remain within the subcutaneous adipose tissue due to slow absorption (Ferraro, 2012), which results in a slow release of intracellular content, thus preventing the triggering of inflammatory reactions during the apoptotic process (Abboud, 2020; Loap, 2012). More recent evidence indicates that perilipins are activated by local lipolysis and activate PKA, ATGL, HSL and MGL (triglyceride lysis) after cryolipolysis and apoptosis (Keiper, 2017; Okla, 2017). Ferraro, in 2011, defines the use of the mobile or dynamic gauntlet as a new non-invasive procedure to reduce the volume of subcutaneous fat and fibrous cellulite in areas that would normally be treated by liposuction. Ferraro (2012) defines that liposuction causes necrosis of adipose cells and an increase in hepatic lipids, leading to an increase in hepatic cytolysis rates. In the study, the content of the fat cells

remained trapped in the subcutaneous adipose tissue, evidenced by Oil-Red-O staining, and was absorbed very slowly (apoptosis). The adipose cells suffered stress, as evidenced by Annexin V and propidium iodide (PI), commonly used to evaluate necrosis and apoptosis. In fact, annexin binds to phosphatidylserine when exposed on the outer leaflet of the plasma membrane (apoptosis), while PI binds to DNA only when the cell is dead (necrosis). It was assessed that the number of apoptotic cells (early and late) was greater than the cells in necrosis, confirming that the technique induces apoptosis.

progressively thick. The safety of the method is highlighted by the absence of a significant increase in liver enzymes or serum lipids (Ferraro, 2012). Stevens (2022) demonstrated dermal toning in sagging patients, the skin adhered to the new body contour. The cryolipolysis technique leads to the stimulation of collagen production, formation of new elastin, tissue compaction and fibrosis, caused by thickening of adipocyte septa, as well as dermal toning in three-dimensional images. Therefore, the use of plate cryolipolysis in the treatment of dermal toning presents effective results (Stevens, 2022). Histological and immunohistochemical analysis confirmed a gradual reduction in adipose tissue by programmed cell death, resulting in a reduction in fat thickness, significant improvement in microcirculation and cellulite. The method was safe, with no significant increase in serum liver enzymes or serum lipids. The mobile handpiece promotes selective reduction of adipose cells and is effective in the treatment of cellulite through remodeling of dermal collagen. Histological analysis also confirmed selective and gradual reduction of adipose tissue by programmed death (apoptosis) triggered by reperfusion. In addition, adipose cells, after apoptosis, were surrounded by progressively thick fibrosis. There was also neoangiogenesis, improved oxygen and nutrient flow, and a marked increase in lymphatic drainage (Ferraro, 2012). Molecular studies demonstrated no changes in peroxisome proliferator-activated receptor (PPAR) transcripts. No changes were evident in transcription, which highlights the safety of the technology used. Histological analysis revealed an increase in collagen and fiber thickness in a parallel rearrangement, with evident neovascularization of the subcutaneous tissue when compared with the untreated regions and those treated only with shock waves. Neoangiogenesis, improved oxygen and nutrient flow, and a significant increase in lymphatic drainage occurred.

The mobile handle promotes selective reduction of adipose cells and is effective in the treatment of cellulite, excess fat on the back, flanks and abdominal region, with direct and indirect signs of apoptosis of adipose tissue and remodeling of skin collagen in any of the histological sections. Histological analysis confirmed a selective and gradual reduction of adipose tissue by programmed death (apoptosis) triggered by reperfusion (Ferraro, 2012).

Through the use of a mobile handle, CRYODERMADSTRINGO is promoted, which is the phenomenon that occurs after the application of cryolipolysis. Increased collagen and production of fibrous tissue. In the hypodermis, it is possible to notice an increase in the thickness of the interlobular septa. After freezing, rigidity and hardening of the skin occur. Adipocytes are reactive to thermal shock (Keda, 2020; Stevens, 2022), activating fibroplasty, while preadipocytes and stem cells can escape freezing and injury because they do not have lipids, differentiating themselves (Keda, 2020; Abboud, 2020). Freezing activates cell differentiation, generates an increase in collagen in the adipose tissue and thickening of the interlobular fibrous septa that were injured (Abboud, 2020; Atiyer, 2020). Stevens (2022) used molecular methods and immunohistochemistry to prove what he had already observed in the clinic with years of work with cryolipolysis, he performed RNA sequencing to examine the differential gene expression of the main collagens, positive result, gene expression occurred by immunofluorescence, confirmed positive regulation of RNA In Situ Hybridization (RNAISH) - Investigated distribution of gene markers for type I collagen, and confirmed distribution throughout the dermis. The results were, in Immunohistology by procollagen type I - a 3.62-fold increase in protein ($P < 0.39$), the author also created the term Cryodermadstring in 2014. Therefore, cold lysis becomes active, where due to the low temperature, there is activation of the sympathetic nervous system (Stevens, 2022; Ruiz-Silva, 2023). The association of cold with stimulation of the sympathetic nervous system through electrotherapy promotes activation of the PERK and MiCUS systems. The action of freezing and simulating physical activity through microcurrent (release of hormones similar to physical activity) after lipolytic stimuli (electrolipolysis) encounters an environment with many lipid droplets that influence the organization of the ridges; Mitochondria perform β-oxidation of fatty acids, but when stimulated by cold, drastic changes in morphology occur due to activation of PERK; (Gallardo-Montejano, 2021; Benador, 2018; Varghese, 2019)

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The mobile handle promotes the selective reduction of adipose cells and is effective in the treatment of cellulite and lipedema through the remodeling of dermal collagen. Histological analysis confirmed a selective and gradual reduction of adipose tissue by programmed death (apoptosis) triggered by reperfusion. The safety of the method is highlighted by the absence of significant increases in liver enzymes or serum lipids. Molecular studies did not demonstrate changes in the transcripts of the peroxisome proliferator-activated receptor (PPAR). No changes were evident in the transcription, which highlights the safety of the technology used. (Ferraro, 2012).

There was also neoangiogenesis, improved oxygen and nutrient flow, and a marked increase in lymphatic drainage (Ferraro, 2012).

V. Conclusion

Vulvar sagging is a natural aging process, but it can be accelerated by hormonal, genetic and lifestyle factors. Early recognition of the signs allows the adoption of preventive and therapeutic strategies to maintain the health and aesthetics of the intimate region.

Advances in aesthetic gynecology allow innovative approaches, such as the cryolipolysis technique of plates associated with microcurrents, to restore the firmness and tone of the vulva, promoting functional and aesthetic improvements for patients.

Criotonus is effective and has clinical and histological evidence. The principle behind the technique is based on the activation of the PERK crystal formation system, in thermal shocks that activate both apoptosis through the generation of free radicals that generate lipid peroxidation and the activation of HSP 47, which differentiates fibroblasts into collagen. This technique promotes collagen contraction, stimulates neocollagenesis and improves tissue firmness, offering an effective and safe alternative for patients seeking natural and long-lasting results.

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