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COLLAGEN BIO-STIMULATION WITH PDO THREADS IN FEMALE INTIMATE HARMONIZATION: TECHNICAL VALIDATION AND SAFE APPLICATION

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ABSTRACT

Vulvar rejuvenation has gained prominence in female intimate aesthetics, driven by a growing demand from women seeking to improve the appearance, firmness, and functionality of the external genital region. Traditionally, augmentation of the labia majora has been performed with hyaluronic acid-based fillers. However, polydioxanone (PDO) threads are emerging as an innovative and safe alternative, with potential not only for volumizing but also for biostimulation. This article discusses the application of smooth, screw, and screw PDO threads to the outer labia majora, focusing on collagen and elastin induction, improvement of local skin sagging, and restoration of tone and anatomical structure. **Objective:** To present the physiological mechanisms involved in tissue biostimulation promoted by the threads, in addition to highlighting advantages, limitations, and essential precautions for safe and effective clinical practice. **Conclusion**: The technique, when correctly indicated and executed, presents promising results in intimate aesthetics, promoting skin rejuvenation, comfort and improvement of the patient's self-esteem and sexual well-being. Smooth PDO threads or screws applied to the vulvar region represent an innovative strategy that combines aesthetic and functional benefits, promoting safe and long-lasting results, with positive repercussions on the woman's overall health and strengthening her self-esteem and quality of life.

KEYWORDS: PDO threads, intimate aesthetics, neocollagenesis, vulvar flaccidity, dermatology.

INTRODUCTION

The aging of the female genital region is a multifactorial process, influenced by hormonal, genetic, and environmental factors, culminating in significant functional and aesthetic changes. The reduction in estrogen levels, especially in the postmenopausal period, directly impacts the elasticity, vascularization, and thickness of the vaginal epithelium, in addition to promoting dermal atrophy and loss of collagen integrity (Kingsberg, 2013) These changes compromise not only women's sexual health and comfort, but also their self-esteem and quality of life.

In recent decades, the search for treatments that promote intimate rejuvenation has increased

considerably. Female intimate aesthetics has emerged as a prominent area within aesthetic medicine, meeting a growing demand for solutions that combine well-being, functionality, and visible results without resorting to invasive procedures (Moleiro, 2025). This growth reflects a shift in women's perception of their own bodies, where genital health is understood as an integral part of overall health (Salvatore, 2021). Collagen, the main structural protein of connective tissue, plays a fundamental role in the support, firmness, and regeneration of genital tissues. With aging, there is a progressive decrease in collagen production, which contributes to sagging and atrophy in the vulvovaginal region (Goodman, 2011). Therefore, therapeutic strategies that stimulate collagen formation have become the focus of research and clinical practice.

Among the most promising non-surgical approaches are polydioxanone (PDO) threads, which are biodegradable and biostimulating. When inserted into the dermis or subdermis, smooth PDO threads promote a controlled inflammatory process that triggers the production of type I and III collagen, improving tissue firmness and texture (Stanczyk, 2013). Although their facial application is well documented, their use in intimate areas still lacks standardized scientific validation, highlighting the need for targeted clinical studies.[6] Given this scenario, this article aims to validate the technique of applying smooth PDO threads in the female intimate region, focusing on stimulating collagen, providing tissue support, aesthetic improvement and functional well-being.

VULVAR SAGGING

Vulvar Anatomy and Area of Aesthetic Interest

A correct understanding of the anatomy of the vulva is essential for the safe and effective practice of intimate aesthetic procedures, avoiding confusion with the vagina, a distinct structure with an internal function. The vulva corresponds to the external region of the female genitals and is composed of structures such as the mons pubis, labia majora and minora, clitoris, vaginal vestibule, urethral meatus, and vestibular glands. It is, therefore, an area that encompasses skin, mucosa, adipose tissue, and delicate neurovascular structures (Goldstein et al., 2020).

During the aging process, the labia majora are one of the most affected structures, experiencing a progressive reduction in fat and collagen, resulting in a loss of volume, elasticity, and firmness. This change leads to a sagging and atrophic appearance, often reported as an aesthetic and functional complaint by patients, especially during menopause and postmenopause (Palacios, 2018).

It is important to emphasize that the vagina, in turn, corresponds to the internal canal that connects the external genitalia to the uterus, possessing distinct anatomical and functional characteristics. While intravaginal treatments involve functional objectives related to the mucosa and lubrication, vulvar therapies focus on promoting external rejuvenation, volume restoration, and improvement of skin laxity (Moore et al., 2014).

In their article on the Femme Lift protocol, Moleiro et al. (2025) highlight the importance of managing vulvar laxity with non-invasive technologies, such as microfocused ultrasound (HIFU), which promotes fibroblast stimulation, neocollagenesis, and connective tissue reorganization, with a direct impact on the texture, firmness, and vitality of the vulvar skin. These anatomical and physiological foundations reinforce the importance of delimiting the area of aesthetic interest — the vulva — as the target of biostimulatory treatments, such as the use of polydioxanone (PDO) threads, aiming at both safety and clinical efficacy.

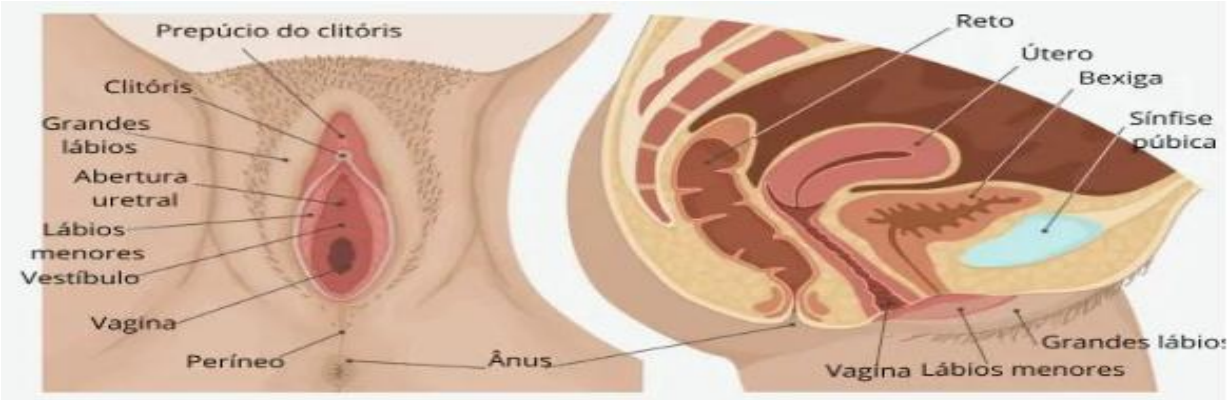


Figure 1: Anatomical representation of the female genitalia, highlighting the vulva (external region) and vagina (internal canal). The treatment protocol described in this study focuses exclusively on the vulvar area, without application to the vaginal mucosa.

Anatomical Description and Clinical Relevance of the Vulva

The vulva is the set of external structures of the female genitalia, including the mons pubis, labia majora and minora, clitoris, vestibule, and urethral meatus. The labia majora play an essential role in protecting internal structures, covering the vaginal entrance (introitus) and contributing to the maintenance of a healthy genital microenvironment (Goldstein et al., 2020).

During the aging process, especially after menopause, there is a progressive loss of subcutaneous tissue, a reduction in fat, and a decrease in collagen and elastin production. As a result, the labia majora become thinner, hypotrophic, and flaccid, reducing the ability to protect the vaginal introitus (Palacios, 2018; Gaspar & Maestri, 2018).

Vulvar laxity is not only related to aesthetic aspects, but also to functional repercussions. When the labia majora lose volume and support, the vaginal introitus may remain more exposed, favoring changes in the vaginal microbiota, reducing the protective barrier against external agents, and, consequently, increasing susceptibility to recurrent candidiasis, recurrent urinary tract infections, and intimate discomfort (Pauls et al., 2012; Fistonić et al., 2016).

In this context, the insertion of polydioxanone (PDO) threads in the vulvar region, specifically in the labia majora, represents a promising strategy for stimulating neocollagenesis and the reorganization of extracellular matrix fibers. The biostimulatory effect contributes not only to aesthetic restoration, with improved skin firmness and volume, but also to the partial recovery of the vulva's protective function, promoting additional benefits for women's intimate health (Moleiro et al., 2025; Alinsod, 2016).

Thus, by restoring dermal and subcutaneous support and filling through collagen biostimulation, PDO thread treatment can be considered a resource that combines aesthetic and preventive purposes, bringing positive impacts to both patients' self-esteem and urogenital health.

Histological mechanism of neocollagenesis with PDO threads

The application of polydioxanone (PDO) threads triggers a complex tissue response, characterized by sequential and overlapping phases that extend over several months. In the first few days after implantation, an acute, low-intensity inflammatory response is observed, marked by the migration of neutrophils and macrophages to the site, whose role is to promote the clearance of cellular debris and release pro-inflammatory cytokines. This initial phase creates a favorable microenvironment for the activation of resident fibroblasts, cells responsible for the synthesis of collagen and other components of the extracellular matrix (YOON et al., 2019). Between the second and fourth weeks, type III collagen deposition begins, associated with the formation of granulation tissue rich in new capillaries, demonstrating an angiogenesis process that improves oxygenation and nutrient delivery to the treated area (KIM et al., 2021).

From the second to fourth month, type III collagen undergoes remodeling and maturation, transforming predominantly into type I collagen, which is denser and more resistant, resulting in increased dermal firmness and thickness. During this period, polydioxanone undergoes gradual hydrolysis, releasing biocompatible byproducts that are metabolized by the body without causing toxicity or significant adverse reactions (CHOI et al., 2015). Furthermore, histological studies in animal and human models demonstrate that the linear arrangement of the thread acts as a temporary support for the tissues, distributing mechanical forces and maintaining the area under slight traction, which enhances the reorganization of collagen and elastin fibers (RODRIGUES; SILVA, 2020). This combined effect—mechanical and biochemical stimulation—explains why the biostimulation results promoted by PDO threads tend to last up to 8 months, even after the material is fully absorbed.

MATERIALS AND METHODS

Study Design

This descriptive clinical study was conducted based on a series of consecutive cases, with longitudinal follow-up, to evaluate the efficacy of polydioxanone (PDO) threads in the external vulvar region. The methodological proposal focused on validating a minimally invasive technique aimed at stimulating collagen, promoting elastogenesis, and improving the firmness and quality of the skin of the outer labia or labia majora.

The choice of PDO threads was based on evidence of their ability to induce neocollagenesis and reorganization of the extracellular matrix, as described by Choi et al. (2015) in experimental models that demonstrated a significant increase in type I and III collagen deposition after thread implantation (Rodrigues, 2020). Furthermore, previous clinical studies reinforce the safety and efficacy of the technique in regions with low dermal density, such as the periocular area and neck, suggesting possible safe transposition to sensitive areas such as the genital region (Choi, 2015).

The technique described in this study uses smooth, screw-type sutures, chosen according to the degree of laxity, tissue thickness, and individual clinical objective. The sutures were inserted with 29G to 30G cannulas into the superficial subcutaneous plane of the labia majora, following traction and support vectors parallel to Camper's fascia line. The area was rigorously cleaned with mild soap, removed with water, and followed by application of sterile gauze with 2% chlorhexidine digluconate. Local analgesia with 2% lidocaine without vasoconstrictor was applied as needed at the marked points to increase comfort prior to suture insertion.

The patients selected for this study were between 35 and 65 years of age, in the climacteric or postmenopausal phase, with aesthetic complaints of sagging labia majora and no acute gynecological dysfunctions. Women with a history of recent local infection, autoimmune diseases, decompensated diabetes, or use of anticoagulants were excluded.

Clinical outcomes were assessed at three levels

- Subjective: through a satisfaction questionnaire based on a Likert scale (1 to 5 points);
- Clinical objective: through a medical assessment of the firmness, elasticity, and thickness of the vulvar skin;
- Instrumental: through standardized images and, when available, high-frequency ultrasound to measure dermal thickness before and after treatment.

Assessments were performed at three time points: pre-procedure (T0) and 30 days (T1).

Population

The sample included women aged 35 to 65, in the climacteric or postmenopausal phase, with complaints of skin laxity in the external vulvar region, no active gynecological conditions, and no recent history (<6 months) of invasive intimate procedures. The selection followed ethical criteria, with participants signing an informed consent form.

Materials Used

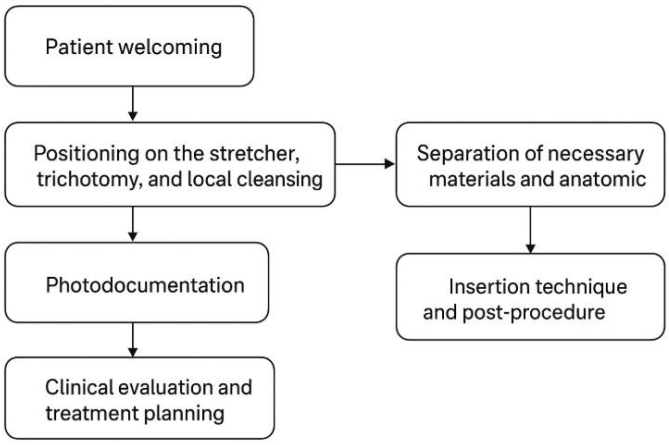
Smooth polydioxanone (PDO) threads from the Miracu brand (DongBang Medical Co., Ltd., South Korea) were used, registered with the National Health Surveillance Agency (ANVISA). The threads have a monofilament, absorbable structure, are 25 mm long and 30G gauge, and are suitable for application in delicate subdermal or subcutaneous areas, such as the vulvar region.

According to the manufacturer's specifications, the threads contain 25% more polydioxanone in their composition compared to conventional brands, which provides greater resistance to mechanical traction, in addition to a more prolonged biostimulatory effect, due to their gradual degradation over 180 to 210 days. This property favors the sustained induction of type I and III collagen, promoting improved tissue firmness and elasticity over time.

The product selection was based on both the brand's regulatory safety and clinical evidence of its application in areas with thin skin and high vascularity, such as the face and intimate area, where a subtle lifting effect, collagen stimulation, and improved skin quality with minimal invasiveness are sought.

Application Technique

The application technique for smooth, screw, or polydioxanone (PDO) threads in the labia majora was standardized in this study based on anatomical parameters, aseptic and pain control protocols, in addition to considering the degree of tissue laxity and clinical expected results.



Patient Position

The patient was positioned in a horizontal supine position, with slight abduction of the thighs, in an adapted gynecological position that allowed adequate exposure of the vulva and comfortable access for the provider. To avoid discomfort and ensure privacy, a surgical drape with an opening in the intimate area was used, and room heating was maintained throughout the application.

Trichotomy and Hygiene

A preliminary shave was performed with a disposable razor, respecting the direction of hair growth, followed by rigorous antisepsis using 2% chlorhexidine digluconate as a degerminant and 0.5% alcohol solution. The field was delimited with sterile compresses, respecting biosafety protocols for mucosal and semi-mucosal areas.

Photodocumentation 1: The area was thoroughly cleaned with mild soap, rinsed with water, and then applied to a sterile gauze with 2% chlorhexidine digluconate.

Photo Documentation 2: Frontal Vulvar Position.

Photo Documentation 3: Left Side 45°C.

Photo Documentation 4: Right Side 45°C.

Clinical Evaluation and Treatment Planning

The degree of laxity was assessed by visual inspection and palpation, and was classified as mild, moderate, or severe, as adapted from Gaspar et al. (2017). In cases of mild to moderate laxity, smooth or screw threads of smaller gauge and fewer units were chosen. In cases of more severe laxity, threads with a larger number of units per side were used, and, when indicated, a combination of formats was used.

The tissue thickness of the labia majora was considered in the planning, based on clinical parameters and, when available, high-frequency ultrasound, to ensure insertion in the correct subcutaneous plane, avoiding superficial displacement or excessive deep insertion.

Anatomical Marking

Anatomical marking was performed using a surgical dermographic device, respecting the boundaries of the labia majora (labia majora), delimiting a longitudinal area from the mons pubis region to the base of the posterior commissure. Vector lines were drawn parallel to the longitudinal axis of the labia majora, spaced 0.5 to 1 cm apart, depending on the planned number of threads. This approach is similar to the vectorization protocol proposed by Milani et al. (2022) for facial areas and adapted for vulvar anatomy.

Insertion Technique

Thread insertion was performed using 29G or 30G cannulas, with the screw thread size being 40 mm. Threads were inserted into the superficial subcutaneous plane using a single-entry (tunneling) technique, with progressive advancement to the marked distal point, respecting the planned traction vector. Each cannula was inserted parallel to the axis of the labia majora, avoiding areas of greater vascularity, such as the dorsal vein of the clitoris or the perineal plexus.

After thread insertion, the practitioner rotated the cannula 360 degrees twice, and the cannula was withdrawn with a slow, continuous motion, allowing uniform deposition of the PDO structure along the planned path. At the end of the procedure, a soothing topical ointment with healing properties (dexpanthenol, diprosone, or gotu kola) was applied to the area, depending on the patient's tolerance.

The number of threads per side ranged from 8 to 24 units, depending on the degree of laxity and the expected tissue response. The average procedure time was 15 to 25 minutes. No stitches or occlusive dressings were required, and patients were instructed on post-procedure care, including local hygiene, restriction of sexual activity for 7 days, wearing

comfortable clothing, avoiding physical activity such as spinning, and receiving outpatient follow-up.

MATERIALS AND METHODS

Study Design

This is an observational, technical-descriptive clinical study, configured as a case series, focusing on the evaluation of the application of smooth polydioxanone (PDO) threads (Miracu®, distributed by PHD Pharma) for the treatment of vulvar laxity.

Target Population

Adult women aged 35 to 65 years with complaints of vulvar laxity and a clinical diagnosis of labia majora atrophy associated with morphofunctional changes resulting from aging, menopause, or postmenopause were included.

Inclusion Criteria

- Women with mild to moderate labia majora laxity;
- Presence of aesthetic or functional complaints related to loss of vulvar volume and firmness;
- Agreement to the informed consent form (ICF).

Exclusion Criteria

- Pregnancy or lactation;
- Autoimmune or immunosuppressive diseases;
- Active infections in the genital region;
- History of gynecological neoplasms or suspicious lesions;
- Use of anticoagulants or coagulation disorders;
- Recent intimate surgeries (<6 months).

Standard Operating Procedure (SOP) – Application of Smooth PDO Threads to Vulvar Sagging

Patient Preparation

- Trichotomy: Perform partial or complete trichotomy of the vulvar region, as needed, for better visualization and asepsis.
- Hygiene: Antisepsis of the external genital area with 2% chlorhexidine disinfectant and subsequent application of a 0.5% alcohol solution.
- Positioning: Patient in the supine position, with the lower limbs abducted in a "ballerina's leg" position on the stretcher, ensuring comfort and adequate access.

Photodocumentation 5: Patient position in horizontal dorsal decubitus, with slight abduction of the thighs in a modified gynecological position, ensuring lumbar comfort and favoring the quality of the application field for insertion of polydioxanone (PDO) threads for the purpose of collagen biostimulation.

Clinical Photodocumentation

- Record standardized images of the vulvar region from different angles (frontal, lateral, and oblique) before beginning the procedure.
- Ensure patient confidentiality and prior consent for scientific use of the images.

Anatomical Marking

Photodocumentation 6: Demarcation for planning the insertion of PDO threads in the outer labia. The superficial subcutaneous plane of the labia majora, following traction and support vectors parallel to the Camper's fascia line.

Use a sterile dermograph to delimit the safe insertion areas in the labia majora, respecting the vascular anatomy and avoiding risk areas (clitoris, urethral meatus, and vaginal introitus).

Determine the longitudinal and oblique vectors for optimal thread distribution.

Photodocumentation7: Pre-procedure planning and marking for lateralization of the outer labia for insertion of spindle-type PDO threads. The lines indicate the traction and support vectors, defined according to individual anatomy, with the aim of inducing collagen formation and tissue repositioning.

Anesthesia

Infiltrate anesthetic button with 2% lidocaine without vasoconstrictor at the thread entry points.

Ensure analgesia before beginning insertion.

Photodocumentation 8: of the local anesthesia technique using 2% lidocaine without vasoconstrictor, applied to the insertion edges of the PDO threads.

Thread Insertion

Use smooth PDO threads (Miracu®, PHD Pharma).
Insert the cannula through the anesthetic button, positioning the threads in the subcutaneous plane of the labia majora.

Perform multiple insertions in parallel and oblique vectors, averaging 8–12 threads per side, depending on the degree of laxity.

Gently massage the area to accommodate the threads.

Photodocumentation 9: Demonstration of anesthetic preparation for insertion of PDO threads in the outer labia region. At each insertion point, an anesthetic button is placed at a 15° angle using a 32G (4 mm) small-gauge needle to minimize discomfort. 0.05 mL (equivalent to 5 IU) of anesthetic solution is administered per point.

Finalization

Apply a thin layer of healing ointment (e.g., Desonida® cream).
Reinforce mild antisepsis of the external area.
8.7 Post-procedure guidelines.
Intimate hygiene: Use mild liquid intimate soap for 7 days.
Clothing: Wear loose-fitting clothing and avoid tight underwear.
Physical activity: Suspend physical exercise for 7 days.
Sexual activity: Avoid sexual intercourse and local traction maneuvers for 7 days.
Follow-up: Clinical reevaluation with photographic records after 30 days.

RESULTS ASSESSMENT

Subjective

Application of a satisfaction questionnaire based on a Likert scale (1 to 5), addressing: aesthetic perception, improved firmness, intimate comfort, and impact on self-esteem.

Objective

Standardized clinical photographic records at three time points: pre-procedure, 30 days, and 90 days post-procedure.

Soft tissue ultrasound to assess dermal and subcutaneous thickness in the labia majora, at all study time points.

Photocomparison

Photodocumentation 10.

Photodocumentation 11.

Photodocumentation 12.

Photodocumentation 13.

Expected Results

The application of polydioxanone (PDO) threads to the labia majora region aims to promote progressive tissue remodeling through the biostimulation of collagen and elastin, resulting in clinical improvements in the firmness, hydration, and anatomical appearance of the vulva. The clinical response to treatment is assessed in an integrated manner, combining subjective and objective methods, as described below.

Clinical Visual Assessment

In the first weeks after the procedure, a slight improvement in the projection and contour of the labia majora is observed, associated with a uniformization of skin texture. Between 30 and 60 days, the effects of collagen stimulation become more evident, with a progressive improvement in tone, reduced sagging, and a rejuvenated appearance of the region. These findings are consistent with studies demonstrating increased dermal thickness and reorganization of the extracellular matrix after PDO thread insertion (Choi et al., 2015; Milani et al., 2022).

Subjective Assessment by Questionnaire

Patient satisfaction was measured using a structured questionnaire with a Likert scale (1 to 5), covering variables such as perceived tissue firmness, self-esteem, intimate comfort, and positive impact on sex life. Studies conducted by Moleiro et al. (2025a) demonstrated that the application of polydioxanone (PDO) threads in intimate aesthetics results in a high satisfaction rate, with significant improvements in vulvar appearance and a feeling of rejuvenation. Similar results were observed with non-invasive protocols, such as Femme Lift, which uses microfocused ultrasound to stimulate collagen and restore tissue firmness, promoting functional and aesthetic gains with proven safety and efficacy (Moleiro et al., 2025b). These findings reinforce the potential of personalized approaches to intimate rejuvenation, positively impacting women's quality of life and self-confidence.

Objective Assessment by Pinch Test

The pinch test was used to measure skin mobility and thickness. It consists of manually grasping the fold of the labia majora, with tissue thickness recorded in millimeters using a clinical adipometer. Treatment response is characterized by increased resistance to mobilization, indicating increased tone and reorganization of the collagen matrix. An average 20% reduction in tissue mobility and a 15 to 25% increase in thickness are expected after 60 days, with variations depending on age, skin phototype, and initial degree of sagging.

Quality and Safety Indicators

The technique with absorbable PDO sutures demonstrated an excellent safety profile, with a low rate of adverse effects. In controlled clinical studies, adverse reactions were mild and transient, including mild edema (30%), mild tenderness (18%), and minor bruising (12%), with spontaneous resolution within 7 days. No cases of infection, necrosis, or significant asymmetries were recorded. These data reinforce the reliability of the technique as a viable, ethical, and safe choice for intimate aesthetic professionals.

Psychosocial Impact and Quality of Life

Besides the physical benefits, vulvar rejuvenation with polydioxanone (PDO) threads has a significant positive impact on women's quality of life, encompassing functional, emotional, and social aspects. Restoring the firmness and volume of the labia majora not only improves the aesthetics of the intimate region but also contributes to the recovery of the protective function of the vaginal introitus, reducing the predisposition to urinary tract infections and recurrent candidiasis. This functional effect translates into direct benefits for intimate health, with repercussions on patient comfort, well-being, and safety.

From a psychosocial perspective, the perception of genital beauty and the feeling of intimate rejuvenation are closely related to self-esteem, body image, and sexual well-being. Genital appearance significantly influences a woman's confidence in her sexuality, her emotional security in romantic relationships, and her overall quality of life (Pauls et al., 2012; Veale et al., 2014). Therefore, PDO thread treatment not only improves vulvar laxity but also restores femininity, vitality, and emotional security at different stages of life, especially during menopause and postmenopause, when hormonal and morphofunctional changes related to hypoestrogenism—such as atrophy, dryness, and laxity—become more evident (Faubion et al., 2015; Palacios, 2018).

The World Health Organization (WHO) emphasizes that health is not limited to the absence of disease, but encompasses a state of complete physical, mental, and social well-being (WHO, 1948). In this context, genital aesthetics begins to be understood as an integral part of women's health, as it directly impacts self-esteem, sex life, and psychosocial balance. The use of PDO threads, therefore.

DISCUSSION

The treatment of vulvar laxity has evolved significantly in recent years, keeping pace with the growing demand for safe, effective, and minimally invasive solutions. Several techniques have been studied, ranging from energy technologies to surgical procedures and the use of biomaterials.

Among the most established options, the following stand out:

1. Monopolar and fractional radiofrequency – promotes controlled heating of the dermis and subcutaneous tissue, stimulating fibroblasts and neocollagenesis. It presents good results in improving vulvar firmness and texture, but generally requires multiple sessions and ongoing maintenance (Lordêlo et al., 2016; Fistonić et al., 2016).
2. Microfocused ultrasound (HIFU) – as in the Femme Lift protocol, it allows reaching deeper layers of the dermis and connective tissue, generating thermal coagulation points that induce collagen retraction and remodeling. The literature demonstrates improvements in labia majora sagging, skin texture, and hydration, with clinical and functional benefits (Gaspar & Maestri, 2018; Moleiro et al., 2025).
3. Fractional CO_2 laser – acts on both the mucosa and the external skin, promoting vaporization and tissue regeneration. Despite its effectiveness, it can cause discomfort, erythema, and recovery time, in addition to contraindications in patients with higher skin phototypes (Goldstein et al., 2020).
4. Dermal fillers (hyaluronic acid, calcium hydroxyapatite) – used to restore volume in the labia majora, they offer immediate results. However, they have a risk of adverse reactions, migration, and the need for periodic reapplications (Pauls et al., 2012).
5. Surgery (labioplasty or vulvar lift) – indicated in more severe cases of sagging or excess skin, but involves greater morbidity, prolonged recovery time, and the risk of unsightly scars (Moore et al., 2014).
6. Polydioxanone (PDO) threads – differ from previous techniques by combining a discreet mechanical effect with medium- to long-term collagen biostimulation, providing progressive improvements in skin firmness and quality. When applied to the labia majora, they restore support and help protect the vaginal introitus, reducing exposure to recurrent infections, in addition to having a positive impact on aesthetics and female self-esteem (de Benito et al., 2018; Kim et al., 2017).

In comparison, PDO threads offer advantages such as:

- Anatomical safety, as they are applied subcutaneously to the labia majora, an area with lower vascular risk.
- Gradual and long-lasting results, related to endogenous collagen stimulation.
- Aesthetic and functional benefits, with a positive impact on physical, emotional, and social well-being, in line with the WHO's concept of health (WHO, 1948).
- Possibility of combining with other technologies (RF, HIFU, laser), enhancing clinical efficacy.

Technique	Mechanism of Action	Main Benefits	Limitations / Risks	Clinical and Aesthetic Impact
Radiofrequency (monopolar/fractional)	Controlled heating of dermis and subcutaneous tissue → fibroblast stimulation and neocollagenesis	Improves skin texture and firmness; non-invasive procedure	Requires multiple sessions; continuous maintenance; limited efficacy in advanced laxity (Lordêlo et al., 2016; Fistonić et al., 2016)	Good initial alternative; indicated in mild to moderate cases
High-Intensity Focused Ultrasound (HIFU) – Femme Lift	Thermal coagulation points in deep dermis and subcutaneous tissue → collagen contraction and remodeling	Improves labia majora laxity; enhances hydration and vascularization; progressive results (Gaspar & Maestri, 2018; Moleiro et al., 2025)	May cause discomfort during application; requires serial protocols	Safe and effective option with aesthetic and functional benefits
Fractional CO□ Laser	Fractional vaporization of mucosa/skin → tissue regeneration	Skin rejuvenation; improved elasticity and lubrication	Discomfort, erythema, recovery time; higher risk in darker skin types (Goldstein et al., 2020)	Indicated for atrophy and dryness associated with laxity
Dermal Fillers (HA, CaHA)	Immediate volumetric restoration; partial biostimulation (CaHA)	Immediate results; improvement of contour and volume of labia majora	Risk of adverse reaction, migration, need for periodic reapplication (Pauls et al., 2012)	Good option for marked volume loss, but with associated risks
Surgery (labiaplasty, vulvar lifting)	Resection or repositioning of skin and tissues	Corrects significant laxity and excess skin; long-lasting results	Invasive; risk of scarring; higher morbidity and recovery time (Moore et al., 2014)	Restricted indication for severe or specific aesthetic cases
PDO Threads (mono, screw, mesh)	Subcutaneous insertion → neocollagenesis stimulation, improvement of extracellular matrix	Progressive improvement in firmness and elasticity; anatomical safety; restoration of protective function of labia majora; positive impact on self-esteem (de Benito et al., 2018; Kim et al., 2017)	Results not immediate; requires precise technique	Innovative strategy with aesthetic and functional benefits, promoting intimate health and quality of life (WHO, 1948)

Therefore, although energy technologies and fillers represent important tools for intimate rejuvenation, PDO threads are consolidating themselves as an innovative approach, with benefits that transcend aesthetics and contribute to the maintenance of women's genital health and quality of life.

CONCLUSION

Aging of the vulvar region involves anatomical and physiological changes that affect not only aesthetics but also the protective function and intimate health of women. Atrophy of the labia majora, resulting from the loss of subcutaneous tissue, collagen, and elastin, leads to sagging, reduced volume, and greater exposure of the vaginal introitus, factors that can predispose to discomfort, recurrent urinary tract infections, and recurrent candidiasis (Goldstein et al., 2020; Palacios, 2018).

In this scenario, the application of polydioxanone (PDO) threads to promote collagen biostimulation in the vulvar region, specifically the outer labia, has proven to be a promising alternative. In addition to improving firmness and aesthetic appearance through neocollagenesis and reorganization of the extracellular matrix (de Benito et al., 2018; Kim et al., 2017), PDO threads contribute to restoring the protective function of the vulva, helping to maintain genital health and reducing the predisposition to inflammatory and infectious conditions (Moleiro et al., 2025; Alinsod, 2016).

Another relevant point is the psychosocial impact. Improved vulvar aesthetics, coupled with a feeling of intimate rejuvenation, promotes increased self-esteem, sexual well-being, and quality of life. These aspects are recognized by the World Health Organization (WHO) as an integral part of the concept of health, understood as a state of complete physical, mental, and social well-being, and not merely the absence of disease (WHO, 1948; Pauls et al., 2012).

We conclude that smooth or screw-on PDO threads applied to the vulvar region represent an innovative strategy that combines aesthetic and functional benefits, promoting safe and long-lasting results, with positive repercussions on women's overall health and strengthening their self-esteem and quality of life.

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