
Vaginal treatment with solid state non ablative laser 1470 nm for vaginal atrophy in post menopausal women

Maddalena Mallozzi

Gynaecologist, Menopause Center Coordinator, Paideia International Hospital, Rome, Italy

ABSTRACT

One of the most common menopausal symptoms is vaginal dryness. Menopausal sex hormone deficiency causes changes in the urogenital tract, where estrogens are the primary regulators of vaginal physiological functions. Many treatments have been developed over the years, but the majority of them are ineffective or have potential side effects. Actually, laser therapy has the highest efficacy with the fewest (or none) side effects. Thermal energy acting on the vaginal wall has been shown in studies to stimulate collagen synthesis, induce neovascularization, enrich the glycogen epithelium, improve vaginal lubrication, and treat urinary incontinence. However, not all lasers are created equal. The majority of published studies describe the data from CO₂ laser therapy, Erbium laser therapy, and radiofrequency. Less is known about the new 1470 nm solid state laser. This is a retrospective study in which 16 women with vaginal dryness were treated with a 1470 nm solid state vaginal laser. All of the patients were cured of vaginal dryness with no pain, bleeding, scarring, or other side effects.

Key words: menopause; vaginal atrophy; vaginal dryness; genitourinary syndrome; vaginal laser.

Corresponding author:

Maddalena Mallozzi

Paideia International Hospital, Via Giovanni Fabbroni 6, Via G. Fabbroni 14, 00191 Roma RM, Italy.

E-mail: maddalenamallozzi@gmail.com

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Introduction

Menopausal genitourinary syndrome (GSM), also known as vulvovaginal atrophy (VVA), urogenital atrophy, or atrophic vaginitis, is a condition caused by low estrogen levels in the urogenital tissues.

GSM can occur at any stage of a woman's life, but it is most common in postmenopausal women, where it is estimated that up to 50% of women are affected.¹

It is defined as a group of symptoms and signs caused by a decrease in estrogen and other sex steroids, involving changes to the labia majora/minora, clitoris, vestibule/introitus, vagina, urethra, and bladder. These changes cause a variety of signs and symptoms such as dryness, burning, and irritation, poor lubrication, discomfort or pain, impaired sexual function, and urinary symptoms such as urgency, dysuria, and recurrent urinary tract infection.^{2,3}

Many menopausal women manage their symptoms with vaginal moisturizers and lubricants, but many others require pharmacological therapy such as vaginal estrogen, vaginal dehydroepiandrosterone, systemic estrogen, or oral ospemifene.⁵

Vaginal moisturizers and lubricants are ineffective in treating the problem, and other pharmacological treatments may have side effects or limitations.

There is an increase in menopausal GSM caused by breast cancer treatments, which often worsens these patients' quality of life, leading them to discontinue breast cancer treatment or suffer in silence.

Pharmacological treatments for these patients are still not universally accepted by the scientific community, so laser therapy remains the best option.⁶

Laser photothermal energy stimulates the heat shock protein, improving collagen structure and inducing neocollagenesis in the skin⁷ and the pelvic floor in conjunction with nearby tissue.⁸

A 64-study systematic review found that vaginal laser improves scores on the Visual Analogue Scale (VAS), Female Sexual Function Index (FSFI), and Vaginal Health Index (VHI) in GSM in the short term.⁹

A Bayesian network analysis of 29 randomized trials and 8311 patients was used to investigate the efficacy and safety of current treatments for genitourinary syndrome of menopause.

They reported that laser therapy, followed by vaginal estrogen, confers superior clinical outcomes for most aspects associated with the disease.¹⁰

More doubts were about safety outcomes, the most reported were pain during the procedure, scarring, agglutination, penetration injury and bleeding.

But the lasers are not all the same.

In medicine, the term "laser" refers to a variety of devices. They emit different wavelengths of energy and produce different effects in different tissues,¹¹ resulting in clinical outcomes that differ in their side and/or adverse effects. Most studies to date have included CO2 lasers, Erbium lasers, and radiofrequency, but only a few have included the solid state laser 1470 nm.^{12,13}

These two studies show that this laser has a regenerative effect, with a significant improvement in vaginal health index and urinary incontinence with no adverse effects.

The goal of this study is to collect more information about the efficacy and safety of this non-ablative laser when used to treat vaginal dryness.

Materials and Methods

This retrospective study included 16 women with vaginal dryness who received four treatments, one every two weeks. I used an EUFOTON non-ablative Solid State Vaginal (SSVL) Laser. with a wavelength of 1470 nm using a fluence (laser energy emitted per unit area) of 10-15 J/cm².

The SSVL (LADYLIFT) handpiece used to perform the treatment is a vaginalinternal probe designed for gentle introduction with continuous radial light emission working at 360° on the vaginal channel. Its spot size it's larger than the spot size of the other vaginal laser (CO2, Er: Yag spot size 150-300 micron) and this characteristic enables greater depth of penetration improving the absorption of energy at the target. Particularly this laser uses a laser wavelength with a proper mix between water absorption and tissue penetration without creating ablation.

The procedure was performed in the outpatient clinic and did not require any specific preparation (e.g. analgesia/anesthesia). After each treatment the patients were advised not to have sexual activity and not to wear tight clothing and/or play sports that would rub the treated area for 1 week.

Participants reported a cumulative intensity of GSM symptoms using a 10-cm VAS (dryness and/or burning and/or dyspareunia). The scale's left extremity indicates the complete absence of symptoms (0) and the right ex-

tremity indicates the worst possible symptom, and women rated the symptoms from 0 to 10.

The severity of vaginal dryness was collected before the start of the first treatment and after 4 weeks from the last one.

Results

A total of 16 patients were enrolled at Paideia International Hospital in Rome from September 2020 to June 2023.

The patients enrolled were post menopausal women complaining vaginal dryness, with mean age of years 57 and a mean BMI of 24.

Only 62% of them were sexually active and only one had a previous vaginal hormonal therapy that stopped for the diagnosis of an endometrial polyp, about a year before of the vaginal laser treatment.

During the procedure no pain, burning, or itching was reported.

The only reported vaginal feeling was the one of the probe moving. Only 5 patients reported feeling warm at the vaginal introitus.

After four treatments, the majority of patients had completely resolved their vaginal dryness, and the majority of them had noticed an improvement since the first treatment.

One patient left the protocol after the first treatment, believing that the vaginal dryness had been completely treated, but returned after 6 months, blaming the symptom for reappearing (we explained to the patient that the full cycle of four treatments was required to last the effect for 18-22 months).

Only one patient did not benefit from the treatment.

Discussion

The study evaluates the efficacy as well as the absence of major adverse effects.

The only patient who did not benefit from the laser treatment had gastroesophageal reflux, uterine prolapse, and multiple post-surgical incisional hernia, indicating a possible defect in collagen synthesis.

As a result, if abnormal collagen synthesis is stimulated, we cannot determine an efficient vaginal tissue restoration.

One of the patients who had poor results with vaginal atrophy was of advanced age (70 years), necessitating more than four treatments for a woman who had been menopausal for more than 20 years.

According to two previous SSLV studies, for laser treatment to be effective, it must be administered at a time when tissue reaction is at its lowest.

The treatment should begin as soon as possible for the best results.

However, if treatment begins too late, we can simply perform more than four treatments.

This vaginal laser can make a difference because it is not harmful or ablative, but it has an efficacy comparable to the ablative lasers studied so far.

Conflict of interest: the author declares no potential conflict of interest and confirms accuracy. EUFUTON Medical Lasers was not involved in the design, conduction, analyses, and preparation of this manuscript.

Ethics approval: not applicable.

Informed consent: all patients participating in this study signed a written informed consent form for participating in this study.

Patient consent for publication: written informed consent was obtained from a legally authorized representative(s) for anonymized patient information to be published in this article.

Availability of data and materials: all data generated or analyzed during this study are included in this published article.

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