

Post-procedural infection risk following laser vaginal rejuvenation: clinical experience from a single center

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Abstract

Introduction Genitourinary syndrome of menopause (GSM) and vulvovaginal atrophy (VVA) significantly impact women's quality of life, leading to symptoms such as vaginal dryness, irritation, dyspareunia, and urinary incontinence. While traditional treatments include hormonal therapy and surgical interventions, these approaches may not be suitable for all patients. Laser vaginal rejuvenation has emerged as a promising, minimally invasive alternative that enhances vaginal tissue health with minimal downtime.

Methods This retrospective study analyzes data from 53 patients who underwent internal, external, or combined laser vaginal rejuvenation. Patient demographics, medical and gynecological history, treatment indications, procedural details, and post-treatment outcomes were assessed.

Results The most common reasons for seeking treatment included vaginal laxity (69.8%), urinary incontinence (47.2%), and vaginal discomfort (15.1%). The majority (90.6%) opted for combined internal and external treatment, with most undergoing three sessions. Post-procedure symptoms were minimal, limited to transient discomfort and minor, self-limiting bleeding in three patients. No patients developed wound infections; this finding is reflected in the postoperative reevaluation, using genital cultures.

Conclusions Findings suggest laser vaginal rejuvenation is well-tolerated, with high adherence and satisfaction rates. While our study is limited by its descriptive nature and single-center design, results align with existing literature, supporting the procedure's safety and efficacy.

Keywords Laser vaginal rejuvenation; genitourinary syndrome of menopause; vulvovaginal atrophy.

Introduction

Genitourinary syndrome of menopause (GSM) and vulvovaginal atrophy (VVA) encompasses a range of symptoms that significantly affect the quality of life for many women, particularly during and after menopause.^{1,3} These conditions are characterized by a decline in estrogen levels, leading to a cascade of structural and functional changes in the vulvovaginal and urinary tissues. Common symptoms include vaginal dryness, irritation,

dyspareunia, urinary incontinence, and recurrent infections.^{4,7} Such issues often cause physical discomfort, sexual dysfunction, and psychological distress, imposing a considerable burden on overall well-being and intimate relationships.^{1,2}

Despite the prevalence and impact of these symptoms, treatment options have historically been limited. Surgical interventions, though sometimes necessary, are inherently invasive, carry risks of significant complications, and require prolonged recovery periods.³ Non-surgical

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approaches, such as hyaluronic acid injections, offer localized benefits but fail to address the broader range of symptoms associated with GSM and VVA. Hormonal therapies, though effective,⁸ may not be suitable for all patients, particularly those with contraindications or concerns regarding long-term hormone exposure.

In light of these challenges, there is a growing interest⁹ in minimally invasive, multi-benefit treatment modalities that address the diverse manifestations of GSM and VVA. Laser vaginal rejuvenation has emerged as a promising option, offering the potential to improve both structural and symptomatic aspects of these conditions with minimal downtime and a favorable safety profile. Our research article aims to summarize our center's experience regarding laser vaginal rejuvenation, with emphasis on post-procedure outcomes and risks such as infection, lack of therapeutic response or insufficient response.

Methods

Our retrospective study consists of 53 patients who underwent internal, external or combined laser vaginal rejuvenation in our clinic, during the past 5 years. Data analyzed in the present study was collected from the patient chart after assigning each patient a code number, to maintain confidentiality. Patients were included if they were of age (over 18 years old), offered their written consent for the procedure and inclusion in the present study and followed the pre- and postoperative protocol. The standard consent form was signed by all patients and included the use of their anonymized data for retrospective studies. Patients were excluded if they did not present to all their appointments and were lost in the follow-up period.

Data collected for use in the present study included social and biological sex, age, and gynecological history (menarche, menopause, pregnancy and birth, potential pathologies). Reasons for seeking treatment were classified as relating to vaginal discomfort (such as pruritus or dryness), urinary incontinence, laxity or dyspareunia.

The procedure was described using the area of treatment (internal, external or combined), number of sessions required, reported side

effects, and seeking further treatment for the initial concern. Statistical analysis was conducted using the MedCalc® Statistical Software version 22.021 (MedCalc Software Ltd., Ostend, Belgium; <https://www.medcalc.org>; 2024). Quantitative data were expressed as mean and standard deviation. Qualitative data was characterized by frequency and percentage.

Pre-procedure checkups consist of intravaginal ultrasound (with the primary goal of measuring the thickness of vaginal mucosa), cervical smear (PAP test), and vaginal discharge analysis, with pH, HPV testing and urinalysis. After other causes for the patients' complaints are excluded, laser vaginal rejuvenation is scheduled and performed, using the CO₂RE Intima platform, with dedicated handpieces for the type of procedure elected by the patient. The procedure is preceded by topical anesthesia, using a lidocaine-prilocaine cream (25mg/25mg/g) under occlusion with a transparent medical dressing. Following topical anesthesia, the introitus is lubricated using medical-grade paraffin oil. A sterile speculum is gently inserted to provide optimal visualization of the vaginal canal. Any excess vaginal secretions are carefully removed using a sterile gauze or swab, to ensure a clear field for the procedure.

Aftercare consists of local application of fusidic acid-hydrocortisone acetate cream (20 mg/10 mg/g) twice daily for 3 days, continuing with a repairing balm twice daily for a week. Beginning with day three post-procedure, ovules containing hyaluronic acid are prescribed nightly, for five days. Patients are instructed to refrain from intercourse for a week after the procedure.

Follow-up appointments were done on the first postoperative day and six weeks after the procedure. Reevaluation included a detailed history of symptoms and postoperative complications, a questionnaire about patients' reported outcomes, clinical examination of the area and collection of genital cultures.

Results

Our study group is comprised of 53 biologically and socially female patients, with a median age of 45 years. Median menarche age was 13 years, and eight patients had reached

menopause by the time they were included in the study. Only four patients were nulliparous; the rest were uniparous or multiparous. Eleven patients did not report any vaginal birth, while 42 patients had one or more vaginal births and nine patients having given birth through caesarian section (Table 1).

Table 1. Demographic characteristics of treated patients

Characteristics	Results
Age, median	45 years (IQR: 32, 56)
Menarche, median	13 years (IQR: 10, 16)
Menopause, n (%)	8 (15.1)
Pregnancies, median	1 (IQR: 0, 4)
Nulliparous, n (%)	4 (7.5)
Uniparous, n (%)	23 (43.4)
Multiparous, n (%)	26 (49.1)
Vaginal births, n (%)	42 (79.2)
Episiotomies, n (%)	31 (58.5)
No vaginal births, n (%)	11 (20.8)
Cesarian section, n (%)	9 (17.0)

Gynecological medical history was positive for 21 patients included in our analysis, of which 23.8% reported cysts, 23.8% irregular menstruations, 14.3% candidiasis, 14.3% endometriosis, and 4.8% reported HPV infection or recurrent urinary tract infections (Table 2).

As to the reasons of seeking out laser rejuvenation, eight patients (15.1%) reported vaginal discomfort, 25 patients (47.2%) reported urinary incontinence, 37 patients (69.8%) reported vaginal laxity and four of them (7.5%) reported dyspareunia.

Only 2 patients (3.8%) underwent strictly external rejuvenation and 3 patients (5.7%) strictly internal rejuvenation, with the remaining 48 patients (90.6%) opting for the combined internal and external laser rejuvenation. The median number of procedures required to obtain the desired results was three; 41 patients (77.4%) underwent three procedures, with the maximum number of procedures per patient being seven.

Post-procedural symptoms included mild local discomfort for a duration of 24 hours for all of our patients, with three patients (5.7%) reporting minor, self-limiting bleeding. None of

our patients presented wound infections or required treatment for post-procedure complications (Figure 1). Postoperative genital cultures yielded normal results, showing commensal flora. After undergoing laser labiaplasty, 16 patients (30.2%) sought further treatment of the area, such as injection of platelet rich plasma, hyaluronic acid, mesotherapy or surgical labiaplasty.

Table 2. Medical history of treated patients (n=21 patients)

	Frequency	Percentage
Ovarian cysts	5	23.8%
Irregular menstruation	5	23.8%
Candidiasis	3	14.3%
Endometriosis	3	14.3%
Fibromas	3	14.3%
HPV infection	1	4.8%
Recurrent urinary tract infections	1	4.8%
Oral contraceptives	15	71.4%
Vaginal ovules	4	19.0%
Laparoscopy	2	9.5%
Antibiotics	1	4.7%

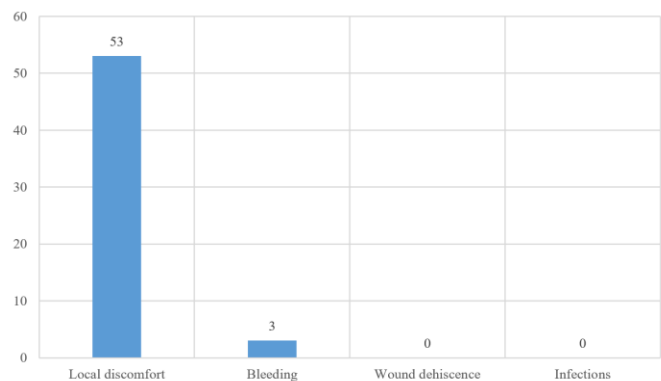


Figure 1. Post-procedural complications (n=53)

Discussion

Laser vaginal rejuvenation can be considered as a safe and well-tolerated procedure for addressing various genitourinary symptoms. Our results suggest that vaginal laser rejuvenation involves minimal post-procedure concerns, limited to transient discomfort and minimal bleeding. None of our patients developed post-

procedural infections. This may be due to both the lack of surgical sutures and the use of laser instead of classical, surgical techniques, which could help in reducing inflammation, aid in coagulation, and such, avoiding wound infection.¹⁰ These findings aligned with other literature reports, in which labiaplasty using a laser-assisted technique was safer and presented fewer postoperative complications than surgical procedures,¹¹⁻¹³ with great patient satisfaction.

All patients included in our study underwent three or more sessions, suggesting their adherence to the protocol. Only 30.2% of patients sought further treatment, indicating a good level of satisfaction with procedure results. These findings align with current literature on the topic, with other authors mentioning similar outcomes.¹⁴

Our study's strength lies in our thorough assessment and care protocol, to ensure patient safety and comfort. Our clinic implements comprehensive pre-procedural evaluations, including intravaginal ultrasound, PAP smear, vaginal discharge analysis with pH assessment, HPV testing, and urinalysis. Postprocedural evaluation consists of clinical reexamination and genital cultures. These assessments are crucial for identifying and mitigating potential risks, thereby enhancing the overall safety profile of the treatment.

Post-procedural care is designed to minimize discomfort and reduce the risk of infectious and non-infectious complications. Patients are advised to refrain from intercourse, tampon use, exercise, heavy lifting, or straining during the first 24 hours following treatment. This precautionary period facilitates optimal healing and reduces the potential for adverse effects. Most patients experience little to no discomfort after the procedure, with any mild symptoms typically resolving within a short timeframe.

The most important limitation is the descriptive nature of our single-center study, which does not allow for inferring causality or correlation. The choice not to pursue inferential analysis was made due to the small and relatively heterogeneous group of patients included. Another limitation is represented by the extended period between follow-up

appointments. The six-week-long break between physical checkups could lead to missing possible minor or delayed infections, which could have resolved themselves by the time of the second follow-up meeting. This issue could be addressed by using a more frequent follow-up schedule.

By adhering to stringent pre- and postoperative protocols, laser vaginal rejuvenation can be performed safely and comfortably, offering a viable therapeutic option for individuals seeking relief from genitourinary symptoms.

Conclusions

Laser vaginal rejuvenation represents a promising, minimally invasive option for managing the diverse symptoms of genitourinary syndrome of menopause (GSM) and vulvovaginal atrophy (VVA). Our retrospective analysis of 53 patients suggests that the procedure is well-tolerated, associated with minimal side effects, and is followed by a high rate of patient satisfaction. A thorough assessment and care protocol, like the one used in our clinic, can mitigate infectious risks and minimize postoperative patient discomfort. While our study is limited by its single-center, non-randomized design and relatively small sample size, the results are consistent with existing literature and support the use of laser therapy as a valuable tool in the therapeutic arsenal for GSM and VVA. Future studies involving larger, more diverse populations and standardized outcome measures are needed to further validate these findings and guide clinical decision-making.

Author contributions statement: FD contributed substantially to the conception and design of the work, performed the procedure described, conducted the literature review, and contributed to drafting the manuscript. SA assisted in the procedure, supported the literature review, and contributed to drafting the manuscript. MMC contributed substantially to the literature review and to revising the manuscript critically for important intellectual content. ASC provided supervision and guidance as thesis coordinator, contributed to the conception and design of the work, and revised the manuscript critically for important intellectual content. All authors reviewed and approved the final version of the manuscript.

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Availability of data: The data supporting the findings of this study are available from the corresponding author, upon reasonable request.

Ethics statement: The study was conducted in accordance with the Declaration of Helsinki and approved by the Ethics Committee of Elos Clinic from Bucharest, Romania (protocol code no. 29 and date of approval 6 January 2020).

References

1. Wasnik VB, Acharya N, Mohammad S. Genitourinary syndrome of menopause: a narrative review focusing on its effects on the sexual health and quality of life of women. *Cureus*. 2023;15:e48143. <https://doi.org/10.7759/cureus.48143>
2. Moral E, Delgado JL, Carmona F, et al. Genitourinary syndrome of menopause: prevalence and quality of life in Spanish postmenopausal women. *The GENISSE study*. *Climacteric*. 2018;21:167-73. <https://doi.org/10.1080/13697137.2017.1421921>
3. Li C, Yu X, Li C, Zhang W. Fractional CO₂ laser for vulvar tissue rejuvenation: a prospective study. *Photobiomodul Photomed Laser Surg*. 2024;42:168-73. <https://doi.org/10.1089/photob.2023.0083>
4. Hutchinson-Colas J, Segal S. Genitourinary syndrome of menopause and the use of laser therapy. *Maturitas*. 2015;82:342-45. <https://doi.org/10.1016/j.maturitas.2015.08.001>
5. Preti M, Vieira-Baptista P, Digesu GA, et al. The clinical role of LASER for vulvar and vaginal treatments in gynecology and female urology: an ICS/ISSVD best practice consensus document. *Neurourol Urodyn*. 2019;38:1009-23. <https://doi.org/10.1002/nau.23931>
6. Han L, Wang L, Wang Q, Li H, Zang H. Association between pelvic organ prolapse and stress urinary incontinence with collagen. *Exp Ther Med*. 2014;7:1337-41. <https://doi.org/10.3892/etm.2014.1563>
7. Rechberger T, Postawski K, Jakowicki JA, Gunja-Smith Z, Woessner JF. Role of fascial collagen in stress urinary incontinence. *Am J Obstet Gynecol*. 1998;179:1511-14. [https://doi.org/10.1016/S0002-9378\(98\)70017-1](https://doi.org/10.1016/S0002-9378(98)70017-1)
8. Malphrus EL, Perelmutter S, Rubin R, Percec I. Menopause in plastic surgery patients: an underrecognized and undertreated comorbidity. *Plast Reconstr Surg*. 2024;154:901-08. <https://doi.org/10.1097/PRS.0000000000001162>
9. Ergul A, Caglar U, Yuksel B, Ozgor F. Using Google Trends for evaluation of public interest in female genital aesthetic procedures. *Dermatol Surg*. 2023;49:762-65. <https://doi.org/10.1097/DSS.0000000000003832>
10. Triana L, Robledo AM. Refreshing labiaplasty techniques for plastic surgeons. *Aesthetic Plast Surg*. 2012;36:1078-86. <https://doi.org/10.1007/s00266-012-9916-z>
11. González-Isaza P, Lotti T, França K, et al. Carbon dioxide with a new pulse profile and shape: a perfect tool to perform labiaplasty for functional and cosmetic purpose. *Open Access Maced J Med Sci*. 2018;6:25-7. <https://doi.org/10.3889/oamjms.2018.043>
12. Pardo J, Solà V, Ricci P, Guilloff E. Laser labiaplasty of labia minora. *Int J Gynaecol Obstet*. 2006;93:38-43. <https://doi.org/10.1016/j.ijgo.2006.01.002>
13. Gécsi AM, Varga T, Vajna R, et al. Comprehensive assessment of labiaplasty techniques and tools, satisfaction rates, and risk factors: a systematic review and meta-analysis. *Aesthet Surg J*. 2024;44:NP798-808. <https://doi.org/10.1093/asj/sjae143>
14. Li F, Picard-Fortin V, Maheux-Lacroix S, et al. The efficacy of vaginal laser and other energy-based treatments on genital symptoms in postmenopausal women: a systematic review and meta-analysis. *J Minim Invasive Gynecol*. 2021;28:668-83. <https://doi.org/10.1016/j.jmig.2020.08.001>

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