INTRODUCTION

Lichen sclerosus (LS) is a chronic inflammatory skin disorder that predominantly presents in the anogenital region and more commonly affects women than men [1]. LS is characterized by porcelain white atrophic plaques that often form in a figure 8 pattern around the vulva and anus [1]. The affected skin often has a papery texture that is susceptible to tearing and traumatic fissures [2]. In some women, the affected skin can also become thickened by hyperkeratosis [3]. Other clinical features include erythema, purpura, erosions, and alterations to the vulvar architecture, including phimosis, resorption of the labia minora, and a narrowing of the introitus [3]. This condition can cause symptoms of intense pruritus, pain, dyspareunia, and difficulty with urination [1].

METHODS

Women (≥18 years) with biopsy-confirmed vulvar lichen sclerosus (LS) and symptoms of dryness, itching, burning, or dyspareunia were recruited from a multi-center study (2017–2018). A 3 mm vulvar punch biopsy at the most affected site confirmed LS and measured collagen depth.

Participants underwent **three Er:YAG laser (2940 nm; ProFractional, Sciton Inc.) sessions** ~4 weeks apart, each with two passes at 11% coverage. The first session matched biopsy depth; subsequent sessions increased by 50 µm. Follow-ups were at 1, 3, and 6 months, and 5 years post-treatment.

At each visit, participants completed the **Vulvovaginal Symptoms Questionnaire (VSQ)** and a **7-point symptom scale** (dryness, itching, burning, bleeding, soreness, tears, ulcers, dyspareunia). Vulvar photographs and qualitative reports were collected with consent.

RESULTS

Five women (ages 57–76) with biopsy-proven vulvar LS underwent three fractional ablative Er:YAG laser (2940 nm) treatments (~4 weeks apart, 11% coverage ×2 passes/session).

- **Case 1 (57 y)**: Untreated prior to study; disease depth 500 µm. After 3 sessions (300–350 µm depth), VSQ and Global scores improved >70%, with complete symptom resolution, restored architecture, and reduced sclerosus (300 µm).
- **Case 2 (64 y)**: On clobetasol and estradiol; disease 400–450 µm. After 3 sessions (500 µm depth), VSQ Symptoms, Emotions, and Life-Impact scores all 0 by 6 mo; 54% Global symptom reduction; biopsy depth reduced to 120 µm.
- **Case 3 (59 y)**: On clobetasol; disease 500 µm. Temporary improvement followed by mild recurrence at 6 mo; Global score reduced 33%. Maintained symptom control with topical hydrocortisone and estradiol.
- **Case 4 (76 y)**: On desonide and estradiol; disease 1000 µm. After treatment (350–500 µm depth), 62% Global symptom reduction, improved sexual function, and decreased sclerosus (800 µm). Photos showed restored elasticity and pigment.
- **Case 5 (73 y)**: No prior therapy; disease 800 µm. After 3 sessions (700–750 µm depth), VSQ and Global scores improved 39%, with histologic resolution of sclerosus(to 120 µm). At 5 years, patient reported sustained remission, restored sexual function, and no need for medications.

PRESENTATION OF VULVAR SKIN (CASE 2)

Pre-Treatment

3-month Follow-Up

6-month Follow-Up

ANALYSIS

This case series assessed fractional ablative **2940 nm Er:YAG laser therapy** for vulvar lichen sclerosus (LS) in five women with biopsy-confirmed disease. All patients showed improvement in at least one **VSQ domain** by 6 months, with three (Cases 1, 2, and 5) achieving near or complete symptom resolution supported by histologic and clinical findings. Long-term follow-up (up to 5 years) showed sustained remission in select cases. Improvements were also noted in emotional well-being, sexual function, and vulvar architecture. One patient experienced mild recurrence, suggesting variability in response. No adverse effects were reported, supporting the **safety and therapeutic potential** of fractional Er:YAG laser therapy for vulvar LS.

CONCLUSION

This retrospective case series contributes to the growing body of literature supporting the use of fractional ablative Er:YAG laser therapy as a novel treatment option for vulvar Lichen sclerosus (LS). By focusing on a non-hormonal, tissue-targeted intervention with the potential to improve quality of life, this study reinforces the need for more comprehensive, patient-centered approaches to gynecologic dermatology.

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