Efficacy and Safety of Diode Laser Therapy for Vaginal Rejuvenation: A Prospective Clinical Study

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Background

Genitourinary Syndrome of Menopause (GSM) is a chronic estrogen-deficiency–related condition characterized by vulvovaginal atrophy, epithelial thinning, reduced elasticity, and impaired lubrication, leading to dyspareunia, urinary symptoms, and diminished quality of life. Vaginal laxity, commonly associated with postpartum changes, further compounds morbidity. Fractional 1470 nm diode laser therapy delivers controlled photothermal energy to the vaginal mucosa and submucosa, stimulating fibroblast activation, neocollagenesis, elastogenesis, and angiogenesis. This mechanism enhances mucosal thickness, vascularity, and hydration through extracellular matrix remodeling and Type I/III collagen synthesis, offering a biologically plausible approach to symptom improvement in GSM and vaginal laxity.

Study Design & Methods

Design: Prospective, randomized, controlled study with 100 women presenting with vaginal laxity and atrophic symptoms.

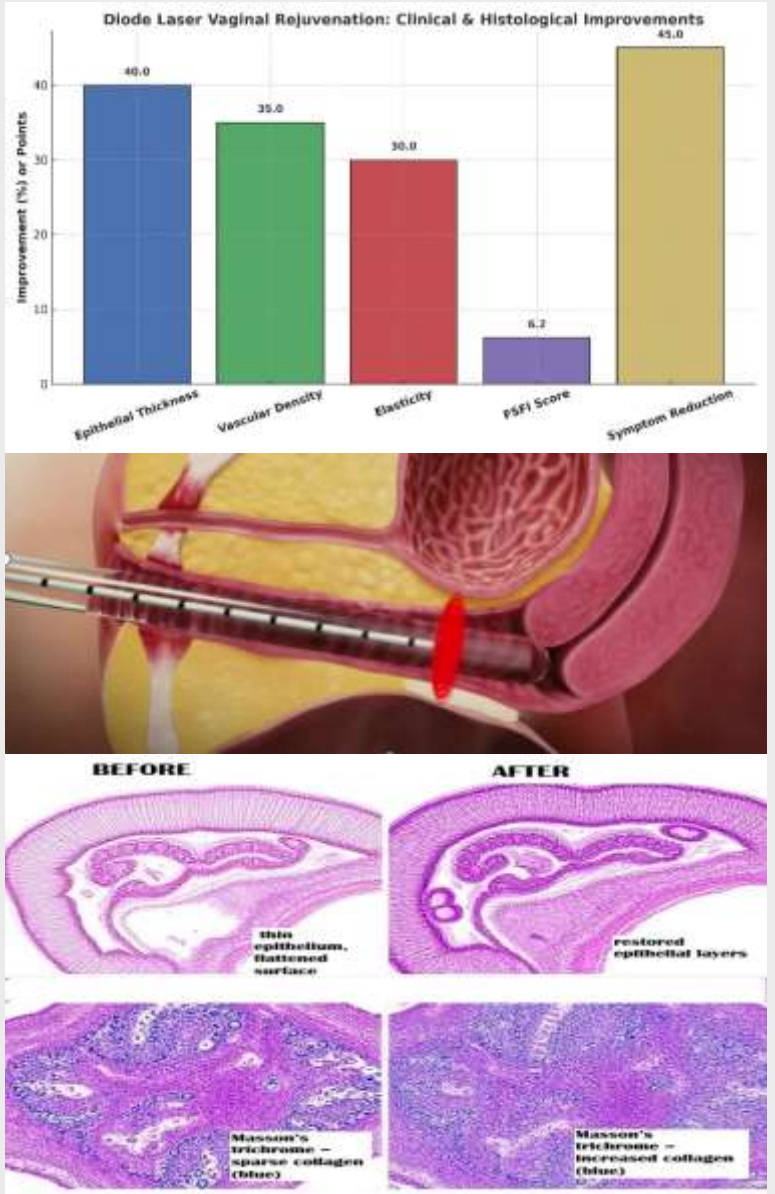
Group A (n=50): Diode laser therapy (1470 nm, fractional mode) – 3 sessions at 4-week intervals

Group B (n=50): Non-hormonal lubricants (control)

Objective Assessments: High-resolution transvaginal ultrasound (TVUS) for Vaginal wall thickness, Elastography for Vaginal wall biomechanical properties, Histopathology Biopsies analyzed for collagen fiber density, epithelial thickness, and vascular changes.

Subjective Assessments: Female Sexual Function Index (FSFI), Vaginal Laxity Questionnaire (VLQ)

Results



Conclusion:

Diode laser therapy is a safe, minimally invasive option for vaginal rejuvenation, yielding significant structural and functional benefits. Larger, long-term studies are warranted.