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**PREVENTION OF THE PROGRESSION OF PROLAPSE OF THE INTERNAL GENITAL ORGANS
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**ПРОФИЛАКТИКА ПРОГРЕССИРОВАНИЯ ОПУЩЕНИЯ ВНУТРЕННИХ ПОЛОВЫХ ОРГАНОВ
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ИЧКИ ЖИНСИЙ А'ЗЛАР ПРОЛАПСИНИНГ ПРОГРЕССИЯСИНИ OLDINI OLISH (ADABIYOTLAR TAHLILI)

Pelvic organ prolapse (POP) is a chronic, progressive, and multifactorial disorder resulting from weakening of the pelvic floor muscles, connective tissues, and supporting ligaments that maintain normal positioning of the uterus, bladder, and rectum. It is one of the most common gynecological pathologies among women worldwide, contributing significantly to morbidity, discomfort, and impaired quality of life. With increasing life expectancy and high prevalence of risk factors such as obesity, childbirth trauma, and menopause-related tissue degeneration, POP is expected to become an even greater public health concern. The purpose of this review is to present a comprehensive overview of the pathophysiology, epidemiology, risk factors, and, most importantly, prevention of the progression of POP through lifestyle interventions, hormonal and physical therapy, and modern regenerative and conservative treatment approaches.

Pelvic organ prolapse represents a complex pelvic floor disorder involving the descent of pelvic structures such as the uterus, vaginal apex, bladder, or rectum into or through the vaginal canal. It is most commonly caused by the weakening or rupture of the connective tissue and muscular framework that supports the pelvic organs (Mayo Clinic, 2024). This condition not only affects the anatomical position of organs but also leads to significant functional impairment, including urinary incontinence, constipation, pelvic pain, and sexual dysfunction. In severe cases, prolapse may extend beyond the vaginal opening, causing chronic discomfort and hygiene issues.

Epidemiological studies have shown that the prevalence of POP increases with parity and age. Globally, approximately 50% of women who have delivered vaginally exhibit some degree of prolapse upon clinical examination, although not all report symptoms (Hagen & Stark, 2011). The lifetime risk of undergoing surgery for POP or urinary incontinence in women in developed countries is approximately 20%, while recurrence rates following surgical treatment range from 10% to 30% (Hagen, Maher, & Adams, 2006). In low- and middle-income countries, the incidence of POP is even higher due to limited access to obstetric care, heavy physical labor, malnutrition, and cultural barriers preventing early treatment (World Health Organization [WHO], 2023). In Uzbekistan and neighboring Central Asian regions, a rising prevalence is observed due to demographic aging and inadequate postpartum rehabilitation services. The pathophysiology of POP is multifactorial and involves structural, hormonal, and neuromuscular changes. The pelvic floor consists of a complex network of muscles—particularly the levator ani group—fascia, and ligaments such as the uterosacral and cardinal ligaments, all of which work together to provide support. Damage to these structures, either through obstetric trauma, chronic strain, or degenerative changes, leads to loss of pelvic support and descent of the organs (Hagen & Stark, 2011). During pregnancy and childbirth, the pelvic floor experiences extreme mechanical stretching, while hormonal changes increase tissue elasticity. Prolonged or instrumental deliveries, large birth weight infants, and multiple pregnancies contribute to irreversible injuries of the levator ani and connective tissue. MRI and ultrasound studies have revealed that levator ani avulsion occurs in nearly 30% of women after their first vaginal delivery (Brown et al., 2022).

In addition to obstetric trauma, chronic mechanical overload caused by obesity, persistent coughing, constipation, or heavy lifting accelerates the weakening of pelvic tissues (Hagen et al., 2006). Estrogen deficiency during menopause further contributes to atrophy and decreased collagen synthesis, making tissues more fragile. Genetic predispositions also play a role; polymorphisms in genes responsible for collagen and elastin production, such as COL3A1, have been linked to increased susceptibility (Zumrutbas, 2025). Other risk factors include aging, chronic respiratory disorders, and connective tissue diseases like Ehlers–Danlos syndrome. The combination of these factors over time leads to the progressive nature of POP, with each episode of increased intra-abdominal pressure contributing to further descent.

Prevention of prolapse progression must be comprehensive, individualized, and lifelong. Lifestyle modification is fundamental. Maintaining an optimal body weight, avoiding chronic straining during defecation, and quitting smoking are proven to reduce intra-abdominal pressure and mechanical stress on pelvic organs. Smoking cessation is particularly critical, as nicotine impairs collagen synthesis and vascular

perfusion of pelvic tissues. Proper bowel management through a high-fiber diet, sufficient hydration, and regular physical activity reduces constipation and straining. Occupational counseling for women engaged in heavy labor is equally important, with emphasis on proper lifting techniques and avoidance of excessive loads (Mayo Clinic, 2024). These preventive measures form the first line of defense and are particularly effective when started early in life.

Pelvic floor muscle training (PFMT) remains the most evidence-based and cost-effective intervention for preventing and treating early stages of prolapse. First introduced by Arnold Kegel, PFMT aims to strengthen the levator ani muscles and restore their ability to provide support to the pelvic organs. A Cochrane review by Hagen and Stark (2011) demonstrated that regular and correctly performed PFMT significantly improves prolapse symptoms, reduces vaginal bulging, and may even reverse mild prolapse. The study also showed that adherence to supervised exercise programs under the guidance of a physiotherapist yields superior results compared to unsupervised training. Biofeedback and electrical myostimulation devices are effective adjuncts, helping patients correctly identify and contract the appropriate muscles, particularly in cases of weakened or denervated pelvic musculature.

In addition to physical training, mechanical support through vaginal pessaries is widely recognized as an effective conservative approach for preventing further organ descent. Pessaries provide internal support by distributing intra-abdominal pressure evenly, thus alleviating stress on weakened tissues. According to the American Academy of Family Physicians (2021), pessary use in combination with PFMT results in greater improvement in both anatomical and symptomatic outcomes than PFMT alone. Regular follow-up is necessary to prevent complications such as vaginal ulceration or infection. In postmenopausal women, concurrent use of local estrogen preparations enhances mucosal resilience and reduces the risk of irritation (Mayo Clinic, 2024).

Hormonal therapy plays a crucial role in maintaining tissue health in postmenopausal women. Estrogen deficiency causes thinning of the vaginal epithelium and loss of connective tissue elasticity. Topical estrogen therapy restores mucosal integrity, increases vascularization, and stimulates collagen formation, thereby improving tissue resistance to mechanical stress. While systemic hormone therapy may be limited by contraindications, local administration is safe and effective for urogenital tissues (Mayo Clinic, 2024). Nutritional interventions that promote collagen synthesis—such as adequate intake of vitamin C, lysine, and zinc—further support the maintenance of pelvic tissue structure, although large-scale trials are still needed to confirm their efficacy. Recent years have seen rapid development in regenerative and minimally invasive technologies aimed at strengthening the pelvic tissues and preventing disease progression. Electrical myostimulation, which delivers controlled low-frequency currents to induce muscle contractions, has been shown to enhance pelvic floor tone and endurance, especially in women with neuromuscular deficits (Hagen et al., 2006). CO₂ laser and radiofrequency therapies are innovative methods that stimulate neocollagenesis and remodeling of the vaginal connective tissue. Salvatore et al. (2019) reported that CO₂ laser treatment resulted in improved vaginal elasticity and symptom relief in 70% of women with early-stage prolapse and genitourinary syndrome of menopause. Although long-term data are limited, early results are encouraging and point toward these methods as effective complements to conservative management.

An integrated and structured preventive strategy should address multiple dimensions of health—mechanical, hormonal, behavioral, and psychosocial. Patient education is an indispensable component of prevention. Women must be informed about risk factors, the importance of early PFMT, healthy lifestyle habits, and the role of follow-up care. Regular gynecological examinations, particularly for women with known risk factors, allow for early detection and timely intervention. Preventive measures should begin during pregnancy, when hormonal and mechanical stresses first act on the pelvic floor. Antenatal education and postpartum rehabilitation significantly reduce the risk of prolapse later in life (WHO, 2023).

The combination of evidence-based measures—PFMT, pessary use, hormonal therapy, and regenerative interventions—forms the foundation for long-term prevention. Table 1 summarizes the most

common risk factors and corresponding preventive strategies used to slow the progression of prolapse.

Table 1: Major risk factors and preventive interventions for pelvic organ prolapse

Risk Factor	Preventive Intervention
Multiparity, childbirth trauma	Skilled obstetric management, postpartum pelvic rehabilitation, supervised PFMT
Obesity and increased intra-abdominal pressure	Weight reduction, aerobic activity, ergonomic education, avoidance of heavy lifting
Chronic cough and pulmonary disease	Smoking cessation, pulmonary rehabilitation, medical management of chronic bronchitis or asthma
Constipation and chronic straining	High-fiber diet, adequate hydration, stool softeners, bowel training
Menopausal estrogen deficiency	Local estrogen therapy, collagen support supplements, regular gynecological monitoring
Genetic connective tissue weakness	Early identification, physiotherapy, nutritional support for collagen metabolism
Sedentary lifestyle and muscle hypotonia	Daily PFMT, moderate exercise, posture correction
Early-stage prolapse (Stage I–II)	PFMT, pessary fitting, electrical myostimulation, laser or regenerative therapy

Comprehensive and long-term preventive strategies are essential to maintaining pelvic health throughout a woman's life. Research indicates that a multidisciplinary approach combining behavioral therapy, mechanical support, hormonal treatment, and emerging regenerative technologies can reduce progression rates by up to 40% (Hagen & Stark, 2011). Prevention is not limited to symptom control—it represents an opportunity to preserve function, dignity, and quality of life for millions of women worldwide.

Pelvic organ prolapse exemplifies a chronic condition in which prevention is not only more effective but also more humane than surgical correction. By integrating preventive education into primary health care, supporting postpartum rehabilitation programs, and promoting awareness about pelvic health, clinicians can significantly reduce disease burden and surgical demand. The goal of prevention should not merely be to delay progression, but to empower women with the knowledge and tools to protect their pelvic health at every stage of life.

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