

## EARLY DIAGNOSIS AND EVALUATION OF TREATMENT EFFECTIVENESS IN CERVICAL DYSPLASIA

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**Relevance.** Cervical dysplasia, also referred to as cervical intraepithelial neoplasia (CIN), represents a spectrum of premalignant epithelial changes associated with persistent infection by high-risk types of human papillomavirus (HPV), particularly HPV-16 and HPV-18. It is widely recognized as a critical precursor to cervical cancer, which remains one of the leading causes of cancer-related morbidity and mortality among women globally, especially in low- and middle-income countries. The progression from low-grade dysplasia (CIN I) to high-grade lesions (CIN II–III) and eventually invasive carcinoma is a multistep process that may take several years, thereby providing a valuable window for early detection and intervention. Despite the availability of effective screening methods, delayed diagnosis and insufficient coverage of screening programs continue to contribute to high incidence rates. Modern diagnostic approaches, including cytological screening (Pap smear), high-risk HPV DNA testing, and colposcopic evaluation with directed biopsy, have significantly improved early detection rates. The integration of these methods enhances diagnostic accuracy and enables risk stratification, which is essential for selecting optimal treatment strategies.

**Aim of the study.** The aim of this study was to comprehensively evaluate the effectiveness of early diagnostic methods and to assess the clinical outcomes of different treatment strategies in patients with cervical dysplasia, taking into account the severity of lesions and associated HPV status.

**Materials and methods.** A prospective clinical study was conducted involving 100 women aged 20–55 years diagnosed with cervical dysplasia of varying severity (CIN I–III). All patients underwent a standardized diagnostic protocol that included cytological examination using the Papanicolaou test, high-risk HPV DNA testing, and colposcopic assessment. Suspicious lesions identified during colposcopy were subjected to targeted biopsy for histopathological confirmation. Based on the severity of dysplasia and clinical indications, patients were stratified into two main groups. The first group included 50 patients with low-grade lesions (CIN I), who were managed

conservatively with observation, antiviral therapy, and immunomodulatory treatment aimed at enhancing viral clearance and epithelial regeneration. The second group consisted of 50 patients with moderate to severe dysplasia (CIN II–III), who underwent surgical intervention, including cryotherapy, laser ablation, or loop electrosurgical excision procedure (LEEP). Patients were followed up for a period of 12 months, during which repeated cytological, virological, and colposcopic assessments were performed. Treatment effectiveness was evaluated based on regression, persistence, or progression of dysplastic lesions, as well as recurrence rates.

**Results.** The implementation of combined diagnostic methods significantly improved early detection rates, with cervical dysplasia identified at early stages (CIN I) in 75.0% of patients. The combined use of Pap smear and HPV testing demonstrated higher diagnostic sensitivity (92.0%) compared to cytology alone (68.5%), confirming the added value of molecular screening. In the conservative management group, regression of low-grade lesions was observed in 68.0% of patients, which can be attributed to the natural course of HPV infection and the effectiveness of immunomodulatory therapy. However, persistence of lesions was noted in 22.0% of cases, while progression to higher-grade dysplasia occurred in 10.0% of patients, highlighting the need for careful follow-up in this subgroup. In contrast, surgical treatment demonstrated significantly higher effectiveness in patients with CIN II–III. Complete regression of dysplastic lesions was achieved in 90.0% of patients undergoing excisional or ablative procedures. Persistence was observed in only 5.0% of cases, and recurrence during the follow-up period was limited to 5.0%, indicating high efficacy and reliability of surgical management. Additionally, HPV clearance rates were significantly higher in the surgical group (82.0%) compared to the conservative group (54.0%), suggesting that removal of affected tissue contributes to viral elimination. Overall, early diagnosis combined with appropriate treatment reduced the risk of progression to invasive cervical cancer by approximately 75–85%.

**Conclusions.** Early detection of cervical dysplasia through integrated screening approaches significantly enhances diagnostic accuracy and allows timely initiation of appropriate treatment. Conservative management may be effective in selected patients with low-grade lesions; however, surgical treatment remains the most reliable method for achieving complete regression in moderate to severe dysplasia. The results of this study underscore the importance of implementing comprehensive screening programs, incorporating HPV testing, and adopting individualized treatment strategies based on lesion severity and virological status. Such an approach is essential for reducing the burden of cervical cancer and improving long-term reproductive and oncological outcomes in women.