

# Effectiveness of HPV Vaccination After Excisional Procedures on the Cervix for High-Grade Cervical Intraepithelial Squamous Lesions

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**Background.** The recurrence rate of high-grade cervical intraepithelial lesions (HSIL) after excisional treatment reaches 15–20%, which is associated with the persistence of high-risk oncogenic human papillomavirus (HPV) in the surrounding epithelium. Adjuvant vaccination following LEEP represents a strategy to reduce the risk of reinfection and recurrence; however, its effectiveness requires clinical validation.

**Objectives.** Evaluation of the effectiveness of human papillomavirus (HPV) vaccination following loop electrosurgical excision procedure (LEEP) for high-grade cervical intraepithelial squamous lesions (HSIL).

**Methods.** A prospective longitudinal cohort study was conducted at the Belarusian State Medical University between 2020 and 2025, including 80 women aged 18–35 years with histologically confirmed HSIL associated with high-risk HPV, all of whom underwent LEEP. Participants were divided into a vaccinated group (n = 31), which received the quadrivalent HPV vaccine within 7 days following LEEP, and an unvaccinated group (n = 49). HPV testing was performed at 6, 12, and 24 months during follow-up. Statistical analysis was conducted using nonparametric methods, with statistical significance set at  $p < 0.05$ .

## Results.

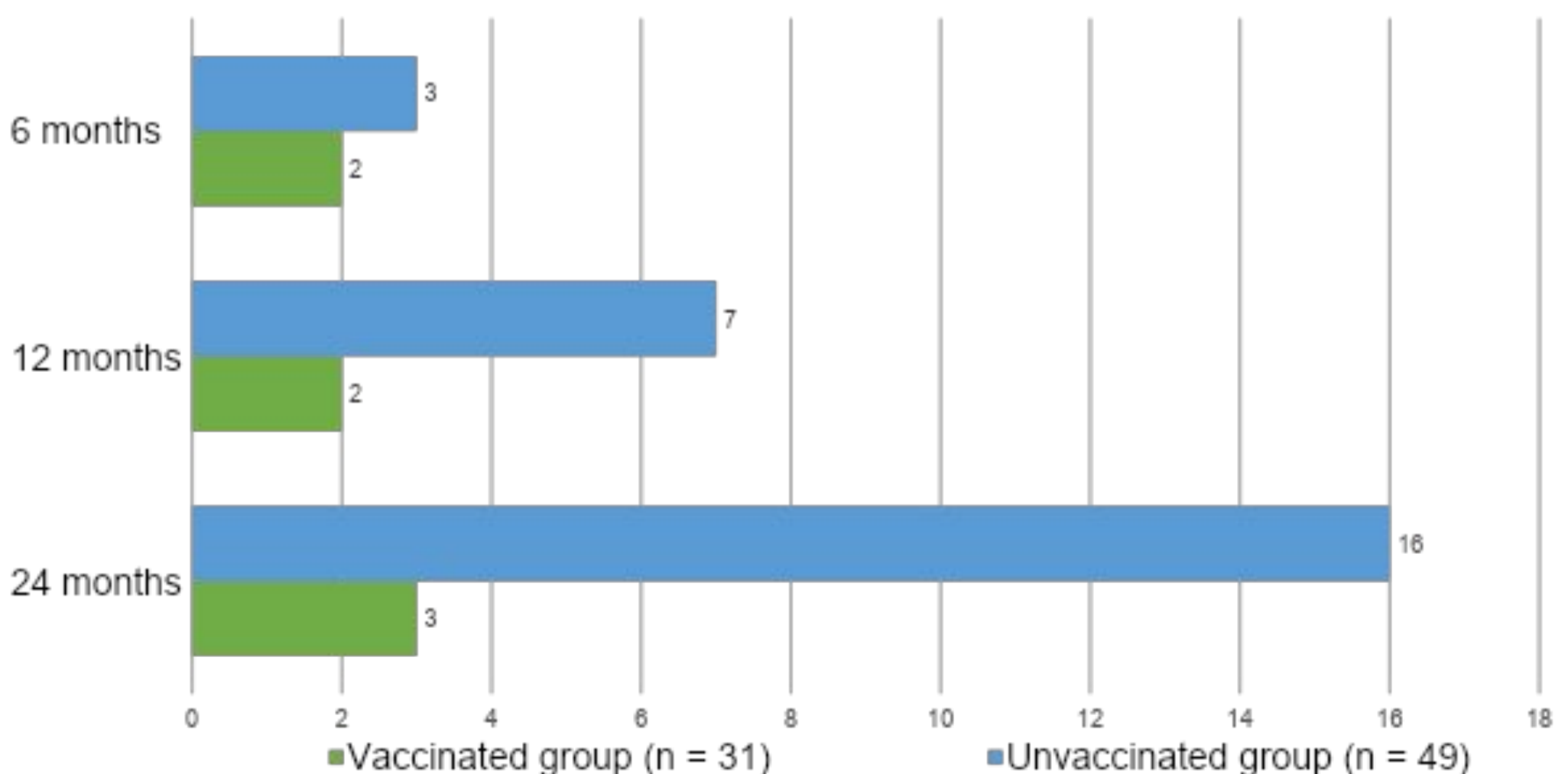
The median age was 25 [24; 27.75] years in Group 1 and 28 [24; 30] years in Group 2, with no significant difference between the groups ( $U = 662.00$ ,  $p = 0.369$ ).

At 6 months after LEEP, HPV positivity was detected in 2 patients (6.45%) in Group 1 and 3 patients (6.12%) in Group 2 ( $p = 0.953$ ).

At 12 months, positive HPV test results were observed in 2 (6.45%) and 7 (14.28%) women, respectively ( $p = 0.280$ ).

At 24 months, persistence of high-risk HPV was significantly lower in vaccinated patients (9.68% vs. 32.65%;  $p = 0.034$ ).

Figure 1 – Dynamics of positive HPV test results in patients with HSIL at 6, 12, and 24 months after surgical treatment, depending on HPV vaccination status.



**Conclusion.** HPV vaccination in the post-excisional period integrates both primary and secondary prevention of cervical cancer, thereby expanding the clinical utility of HPV vaccines. Our findings indicate that adjuvant HPV vaccination following LEEP for HSIL is a promising strategy for reducing the risk of recurrence of precancerous cervical lesions.