

# The value of HPV integration for detecting the miss-diagnosed cervical precancer or cancer: a cross-sectional study

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## Abstract

**Objectives:** To explore the value of human papillomavirus (HPV) integration testing in preventing the missed diagnosis of cervical intraepithelial neoplasia grade 2/3 (CIN2/3) or cancer by colposcopy-directed biopsies.

**Methods:** A total of 417 HPV-positive patients whose colposcopy-directed biopsies revealed normal or CIN1 and subsequently underwent diagnostic cervical conization were enrolled. The predictive value of HPV integration and cytology for discovering CIN2/3 or cancer were analyzed and compared.

**Results:** Among the 417 patients enrolled, postoperative pathological examinations revealed 91 cases of CIN2/3 and 3 cases of cancer. A total of 76 patients tested positive for HPV integration, while 341 patients tested negative. Higher percentage of CIN2/3 or cancer was revealed post-conization in those with positive HPV integration compared with those who tested negative (57.9% [46.5-69.3%] vs. 14.7% [11.0-18.3%], P value = 0.000). Compared to high-grade cytology, HPV integration had higher sensitivity (46.8%[36.7-56.9%] versus 24.5%[15.8-33.2%], P value = 0.003) and comparable specificity (90.1%[86.8-93.4%] versus 91.3%[88.3-94.4%]) in predicting postoperative pathological upgrading. The combination of high-grade cytology and HPV integration could detect 90.9% of missed CIN2/3 or cancer, and a double-negative result indicated normal or CIN1 in 84.0% cases.

**Conclusions:** HPV integration is a valuable predictor for detecting CIN2/3 or cancer miss-diagnosed by colposcopy-directed biopsies.

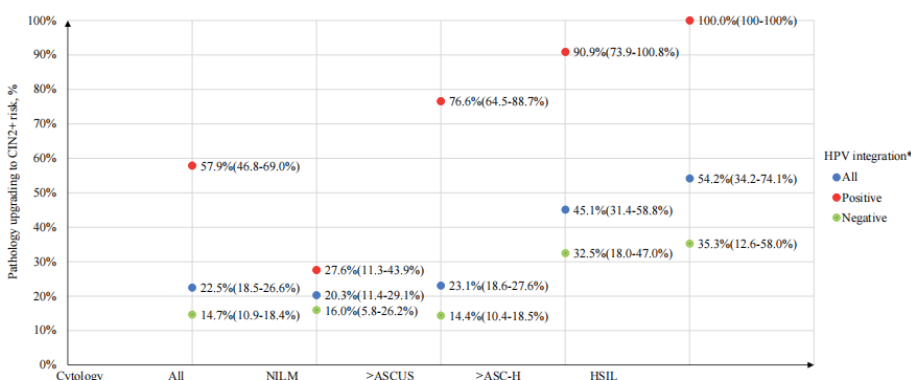


Figure 1S The rate of postoperative pathology upgrading to CIN2+ according to cytology combined with HPV integration test

		CIN2+		Sensitivity	Specificity	PPV	NPV	Accuracy
		Yes	No					
TCT	>LSIL	23	28	24.5%	91.3%	45.1%	80.6%	76.3%
	≤LSIL	71	295					
HPVintegration	Yes	44	51	46.8%	90.1%	57.9%	85.3%	80.3%
	No	50	312					