Posthysterectomy Cytology Screening: Indications and Clinical Implications

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■ **Abstract**

Objective. To review the results of patients who were referred for posthysterectomy of abnormal cytology based on screening indications.

Materials and Methods. We performed a retrospective review of 64 patients who have been referred for posthysterectomy vaginal colposcopy to the gynecologic oncology service. Patients' demographics, clinical features, reason for screening, and final diagnosis were recorded. Patients were divided into 2 groups based on posthysterectomy screening guidelines. Group A was considered to have undergone unnecessary screening based on national guidelines, and group B had risk factors that appropriately called for continued surveillance. The number of colposcopic examinations and the incidence of neoplasia were recorded for each group.

Results. The mean age of the patients was 65 years (range = 35–95 y). Group A included 22 patients with history of abnormal cytology posthysterectomy for benign disease. Of the 22 abnormal cytology results, 21 were low-grade squamous intraepithelial lesion (n = 14) or atypical squamous cells of undetermined significance (n = 7) with 1 high-grade squamous intraepithelial lesion. After referral and colposcopy of this group, no neoplasia was found. Group B included 42 total patients. Of these 42 patients, 20 (48%) had a history of cervical intraepithelial neoplasia, 12 (28%) had a history of vaginal intraepithelial neoplasia, 6 (14%) had history of cervical cancer, 2 (5%) had history of diethylstilbestrol exposure, and 2 (5%) had a history of radiation therapy. In group B, 8 (9%) and 1 (2%) of the patients had vaginal intraepithelial neoplasia 2/3 and squamous cell carcinoma, respectively.

Conclusions. Current national guidelines are appropriate. Adherence to these guidelines will decrease intervention and not affect the detection of vaginal neoplasia. Patients with risk factors for lower genital tract neoplasia warrant continued screening after hysterectomy. ■

Key Words: vaginal cytology, vaginal colposcopy, screening

In situ or invasive squamous cell cancer of the vagina is very rare, the incidence of which being 1 per 100,000 women [1]. Vaginal intraepithelial neoplasia (VAIN) is also not a common diagnosis with its incidence being 0.2 to 0.3 cases per 100,000 women [2]. Vaginal intraepithelial neoplasia often accompanies cervical intraepithelial neoplasia (CIN) and is thought to have similar etiology [3]. It is well known that high-risk oncogenic papillomavirus genomes, human papillomavirus (HPV) types 16 and 18, often integrate randomly into host-cell genomes.

Data from a large German study suggest that perhaps most high-grade lesions in the female genital tract emerge as monoclonal cell populations derived from the cervical transformation zone and that many patients with a previous history of cervical cancer also showed identical viral integration sites between their vaginal and/or vulvar lesions and their previous cervical tumors [4].

In the 1990s, data showed that posthysterectomy vaginal cytology was of little benefit. However, many practitioners continue to perform this screening [5].

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Guidelines for posthysterectomy screening exist and have recently been updated. In 1996, the US Preventive Services Task Force (USPTF) established guidelines that routine vaginal cytology screening is unnecessary for women posthysterectomy for benign disease [6, 7]. The American Cancer Society (ACS) guidelines state that women who have had a total hysterectomy may also choose to stop cervical cancer screening, unless the surgery was performed as a treatment for precancer or cervical cancer [8]. The American College of Obstetricians and Gynecologists (ACOG) as recently as 1995 recommended screening every 3 years for women who have had a hysterectomy unless risk factors are present [9]. In 2009, ACOG updated their recommendations and stated that, in women who have had a total hysterectomy for benign indications and have no previous history of high-grade CIN, routine cytology testing should be discontinued [10]. The present study reviews a cohort of patients with abnormal vaginal cytology findings after hysterectomy and evaluates the effect of these guidelines will have on vaginal neoplasia and intervention.

MATERIALS AND METHODS

We conducted a retrospective review study of the women who were referred for posthysterectomy vaginal colposcopy to the Gynecologic Oncology Service at Main Line Health Hospitals from January 1, 2005, to January 31, 2009. The approval of study by the Lankenau Institute for Medical Research Institutional Review Board was obtained.

Patients' charts were reviewed, and the following information was recorded: age, smoking status, Pap smear results, indications for screening, colposcopic findings, and final diagnosis. Patients with incomplete medical records were excluded from the study.

Patients were divided into 2 groups based on indications for posthysterectomy cytology using ACS guidelines. Group A was considered to have unnecessary cytology screening, and group B had risk factors that called for continue surveillance. We considered a history of lower genital tract neoplasia, diethylstilbestrol (DES) exposure, and radiation therapy risk factors that warrant continued screening. The number of colposcopic examinations and the incidence of neoplasia were recorded for each group.

Table 1. Characteristics of Women in Groups A and B

	Group A (*n* = 22)	Group B (*n* = 42)
Smoking		
Nonsmoker	18	38
Smoker	4	4
Previous VAIN	0	12
Previous CIN	0	16
Previous DES exposure	0	2
Previous cervical cancer	0	6
Previous radiation therapy	0	2
Vaginal bleeding	0	4

Table 2. Comparison of Cytologic Findings Between Groups A and B

Cytology	Group A (*n* = 22)	Group B (*n* = 42)
Negative	—	4
ASCUS	7	5
LGSIL	14	21
HGSIL	1	10
AGC	—	2
Total no. colposcopy	26	97

AGC indicates atypical glandular cell; ASCUS, atypical squamous cells of undetermined significance; HGSIL, high-grade squamous intraepithelial lesion; LGSIL, low-grade squamous intraepithelial lesion.

RESULTS

A total of 200 charts were reviewed and 64 women were identified to be included in the study. All colposcopic examinations were performed by 1 individual clinician using the same colposcope (Wallaach Zoomscope; power 120 V, 50/60 Hz, 1.5 amp).

The median age of the patients was 65 years (range = 35–95 y). Patients were divided into 2 groups. Characteristics of both groups are shown in Table 1. Group A included 22 patients. All of these patients had undergone hysterectomy for a benign condition and had received a Pap test after hysterectomy. According to the guidelines, this group did not require continued screening; however, because these 22 patients were found to have abnormal cytologic results after their Pap tests, they were referred for colposcopy. Group B had 42 patients; all who underwent hysterectomy and also had risk factors. In this group, continued screening after hysterectomy was appropriate according to the current guidelines. Four patients from group B had negative cytologic results but were referred for colposcopy owing to symptoms of vaginal bleeding. Of the remaining 38 women in group B, 16 presented with a history of CIN 2 or worse, 12 had a history of VAIN 2 or worse, 6 had a history of cervical cancer, 2 had a history of DES exposure, and 2 had a history of radiation therapy. Table 2 summarizes the cytologic findings of the 2 groups and the total number of colposcopy in each group. In group A, 4 of the 22 patients had 2 colposcopic examinations, and the

remaining 18 patients had 1 colposcopic examination. In group B, a total of 97 colposcopic examinations were performed.

Overall, 14% of our patients were found to have significant disease. All but 1 patient from group A (21/22) had negative colposcopic results, and no biopsies were warranted. The 1 patient in this group who had high-grade squamous intraepithelial lesion on Pap smear went on to undergo colposcopy and had VAIN 1 reported on biopsy. In group B, 19% (8/42) of patients were found to have VAIN 2,3 after colposcopy and biopsy and 2% (1/42) had squamous cell carcinoma.

DISCUSSION

Vaginal intraepithelial neoplasia is an uncommon premalignant lesion. It represents 1% of all intraepithelial neoplasia of the lower genital tract [11]. Sugase and Matsukura [12] reported 46,094 cervico-vaginal smears collected during 1990 to 1995. On the basis of their observations, they found only 71 cases of VAIN and only 3 cases of invasive vaginal cancers.

Vaginal cytology screening produces a low yield because of the rarity of the vaginal cancer. Recent epidemiologic studies have demonstrated that 8 oncogenic HPV types (16, 18, 31, 33, 35, 45, 52, and 58) are responsible for more than 80% of cervical cancer and CIN 2/3. This is similar when compared with VAIN. There are many other types of HPV that may result in an abnormal cytologic result, but these may have no real association with neoplasia [13]. Pearce et al. [5] analyzed 9,610 vaginal cytologic specimens from patients after hysterectomy. Their analysis revealed 5 histologic findings of VAIN 1,2, and the positive predictive value of the Pap test for detecting vaginal cancer was 0%. In addition, several other studies have suggested that vaginal cytology in selected populations is not cost-effective and provides essentially no gain in life expectancy [14, 15].

In 1992, before USPTF, 68.5% women reported having undergone vaginal Pap test after hysterectomy. Six years after the USPTF recommendation in 2002, once again, 69.1% of women reported having a current vaginal Pap test. Of these, 45.6% of women were screened unnecessarily [16].

Furthermore, ACOG has recently changed guidelines for cytology screening. The ACOG recommends discontinuation of routine screening in women who have had a total hysterectomy for benign indications and have no previous history of high-grade CIN. They also emphasize that the health care provider should assess the accuracy of a woman's cervical cytology history before considering whether the patient should continue regular cytology screening after hysterectomy [10].

Many practitioners continue to screen all women with vaginal Pap tests after hysterectomy, independent of the indication for hysterectomy. In a recent study by Noller et al. [17], clinicians were directly asked if they would ever stop screening after hysterectomy for benign disease; only 84% reported that they would ever stop. This unnecessary testing can cause much anxiety and discomfort for the patient. It can take weeks for the patient to be scheduled for colposcopy because of busy physician schedules, and depending on the laboratory performing the test, it may be another week or more weeks for the results to be reported. Also important, colposcopy with biopsy is an uncomfortable procedure, and most patients would prefer not to undergo the discomfort if it will not be of true benefit.

In contrast to women with hysterectomy for benign disease, several risk factors (previous abnormal Pap smear result, history of cervical cancer, history of radiation therapy, smoking history, and DES exposure) that may influence the development of VAIN have been described in the literature [18–20]. In addition, hysterectomy for CIN is also a known risk factor for the development of VAIN, with the recurrence rates ranging from 0.9% to 6.8% [21].

In a cohort of our patients, 14% (9/64) were found to have significant disease. All patients with neoplasia had risk factors that warranted continue surveillance. Therefore, based on our findings, screening after hysterectomy in patients with risk factors is justified.

On the basis of the number of referrals, at least one third of women may still be getting inappropriate screening. It is impossible to estimate the number of normal smears obtained in this population.

Our study is limited by its retrospective nature and the size of the sample. It does, however, represent a referral practice for the area. The strength of the study is that all evaluations were performed by 1 group of experienced gynecologic oncologists, and complete data were available for the cases.

In conclusion, given the results of our study, we agree with the national ACOG guidelines and guidelines set forth by the ACS that, for women who have had a total hysterectomy for benign indications and have no previous history of high-grade CIN or risk factors, routine cytology testing should be discontinued [8, 10]. If followed, it would decrease unnecessary intervention. In

addition, cessation of screening in low-risk women after hysterectomy will not increase vaginal neoplasia.

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