

Original Article

Comparison Of Pap Smears From Cotton Swab-spatula And Cervex Brush Methods

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ABSTRACT

Background and Objective: Cervical cancer involves many women annually and Pop smear test has played a significant role in reducing its mortality and for this reason, its improvement is very essential. In this respect, cervex brush is a new tool that has been introduced in many countries. Therefore, this study was conducted to compare Pop smears from cotton swab-spatula and Cervex brush methods with regard to cell number.

Materials and Methods: The clinical trial and randomized protocol of this study was conducted on 400 women as referrals of gynecology clinic of Hazrat Rassoul Akram (s) hospital and the cases with inclusion criteria were further investigated and their data using above-mentioned methods were compared. For statistical analysis, SPSS software and student's t-test and chi-square tests were used.

Results: It was found out that the mean age of cases was 34.13 ± 9.3 years. Meanwhile, there was a significant difference between the groups regarding endocervical cells ($p < 0.001$) and bleeding on sampling ($p < 0.001$).

Conclusion: It is concluded that appropriate use of Cervex brush method can prevent the need for re-sampling regarding Pop smear test and in this way it can lower health-related costs.

Key words: Pap smear, Cervex brush, Cotton swab-spatula

Introduction

Health has been considered as one of the most important factors for an efficient family and society and cancer is a chronic non-contagious disorder that can strongly threaten this issue. Cancer has been reported as one of the three principal causes of mortality in women at all age groups. In addition, approximately 13% of invasive cases of cancer occur in uterus, which

40% of them have a cervical origin (1). Cervical cancer is regarded as a tractable and preventable condition which its incidence has been reduced from 30/1000 to 5/100000 and its mortality rate has changed from 12/1000 to 3/1000 (2). However, 13000 new cases of invasive cervical cancer and 4100 deaths as its consequence have been reported in the USA in 2002 and therefore this cancer has remained as an unresolved health-related problem worldwide (3).

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Cellular changes of cervix can be identified using Pop smear test. Despite its successful results, it may accompany negative pseudo findings. For this reason, its improvement is very essential. Since screening for cervical cancer is strictly dependent on the presence of endocervical cells (4), therefore, it is a necessity to find a tool with no and/or lower unnecessary mucosal damage and hemorrhage induction with sufficient collection of cells. In this respect, Cervex brush is a new tool that has been introduced in many countries and make it possible to have one-step sampling and lower the need for re-sampling. Meanwhile, this new method has a higher power to differentiate endocervical cells. On the other hand, due to its efficiency it can reduce health-related annual costs by 22000 \$ (5). Therefore, this study was conducted to compare Pop smears from cotton swab-spatula and cervex brush methods with regard to cell number.

Materials and Methods

The present study was designed as an interventional and double-blind one during the years 2004-2005 and conducted at gynecology clinic of Hazrat Rassoul Akram (s) hospital. Sample size was estimated using related formula (a and b errors as 5 and 20% respectively) and obtained as 200 cases in each group (i.e. cotton swab-spatula and Cervex brush methods). Meanwhile, cases were randomly assigned to groups. For data collection, a checklist was used. In addition, inclusion criteria were the absence of vaginitis and cervicitis, cervical neoplastic lesions, a history of cervix freeze, doing Pop smear test for the past 6 months, not being an

alcoholic and cigarette smoker, not using vaginal creams and related chemicals for the past 24 hours, not having an intercourse for the past 24 hours, not having menses, not being pregnant, and not being a multi-partner case.

After explaining the experimental objectives for research team, group 1 made responsible for endocervical sampling using normal saline-soaked cotton swab and sampling from outer aperture of uterus using spatula and group 2 was responsible for such sampling using Cervex brush. Then, the prepared slides were carefully analyzed by an experienced pathologist. For statistical analysis, SPSS software, descriptive analysis, student's t test, and chi-square tests were used.

Results

The mean age of women was 33.38 ± 8.84 and 34.89 ± 9.75 years for sampling methods of cotton swab (and spatula), and Cervex brush respectively. Meanwhile, the mean age of their marriage for these groups was 24.1 ± 2.5 and 23.7 ± 2.6 years respectively. Regarding menstrual condition, 358 (89.5%) cases had an active reproductive activity and 42 (10.5%) cases were menopausal. Meanwhile, endocervical cells were observed in Pop smears from 356 (89%) cases and abnormal cells were identified in 94 (23.5%) cases. Out of the latter, 80 cases had an infection and 14 cases had ascus. In addition, 44 (11%) cases had bleeding at the time of sampling (Table 1). In addition, there was also a statistically significant difference between the two groups regarding the presence of endocervical cells ($p < 0.002$) and bleeding on sampling ($p < 0.001$).

Table 1. Relative and absolute frequency distribution for Pap smear findings using cotton swab and Cervex brush methods

Method Findings	Coton swab and spatula		Cervex brush	
	Number	%	Number	%
Endocervical cell	168	84	188	94
Abnormal cell	48*	24	46	23
Infection	40	20	40	20
Ascus	8	4	6	3
Bleeding	34	17	10	5

* Abnormal cell includes both infection and ascus.

Discussion

As mentioned before, this study was carried out on 400 cases of Pop smear in two subgroups (n=200 for each one). It was found out that there is no significant difference between the groups regarding age, marriage age, parity, gravidity, and menstrual cycle condition. This clearly shows that our randomized selection method has been correctly designed.

In this study, it was found out that the number of endocervical cells is significantly higher for Cervex brush method than cotton swab and spatula method. In a study by Harrison et al, only 7% of samples from Cervex brush method did not have endocervical cells and significant difference was found as compared to results from cotton swab method (5). In addition, Kavak et al found a similar result and showed that simultaneous use of cotton swab and cytobrush can effectively detect endocervical cells like Cervex brush method (6). Meanwhile, Pretorias in their clinical trial and randomized study showed that Cervex brush is significantly different from cotton swab method regarding the detection of endocervical cells (7) that is consistent with our results with regard to methods used and technician experience.

In this study, we also found a significant difference between the groups regarding on sampling bleeding with a lower rate of hemorrhage in Cervex brush group. In this respect, Sparrow reported a similar result (8). In addition, although Neirstein showed that results for concurrent use of cytobrush and spatula are not significantly different from cotton swab method with regard to bleeding (4), Rahnema et al found that cytobrush and spatula method accompanies more bleeding than cotton swab and spatula method (9).

On the other hand, in our study, there was not a significant difference between the groups regarding the number and type of abnormal cells. Similarly, Germain found that both methods are alike for detection of dysplastic lesions (10). These findings are also supported by Pretorius (7).

Conclusion

It seems that preparation of cervical smear by Cervex brush method due to its higher number of endocervical cells and a lower bleeding is more appropriate than cotton swab and spatula method

and this can certainly reduce patients' apprehension and the need for re-sampling and lower health-related costs.

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