

## THE EFFICIENCY OF THE CYTOBRUSH VERSUS THE COTTON SWAB IN PREPARATION OF CERVICAL SMEARS

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### SUMMARY

Studies on sampling methods for obtaining cervical cytology specimens have shown that the sampling site and the method of collection have an impact on false negative rates. The significance of the presence of endocervical cells in cervical smears has been stressed by Elias et al (1983) and many centres consider a smear inadequate if it lacks cells from the transformation zone.

The Cytobrush technique developed by Stormby has gained popularity in recent times as this method has significantly reduced false-negative rates.

We undertook a study to compare the yield of endocervical cells by two well established methods namely the Cytobrush and the conventional cotton swab techniques and found that the yield of endocervical cells was significantly higher ( $p < 0.001$ ) with the Cytobrush technique.

### Material and Methods

42 consecutive non-pregnant women who attended the Gynaecology clinic of the Hospital of St. Raphael were evaluated. The smears were obtained by a single person (first author) and examined by a single person (second author).

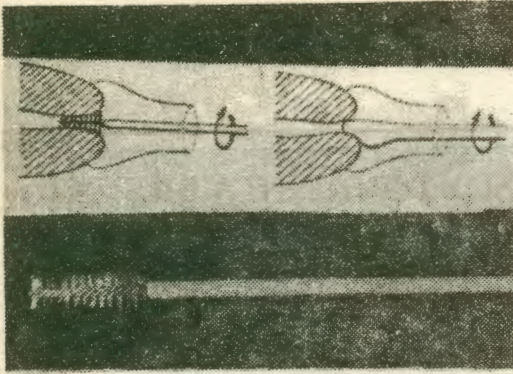
The Papanicolaou smear was taken in the following manner. First a sample was obtained from the endocervix by a cotton tipped swab dipped in normal saline to ensure that the cells do not dry up and in order to increase their yield. Following that a sample was taken from the en-

docervix by the Cytobrush (Medscand AB, Int. Cytobrush, Inc. Florida). The ectocervix was sampled with the spatula. As soon as the material was obtained it was smeared on a glass slide and spray fixed. The 3 smears were prepared on 3 different slides to avoid any possible mix-up of specimens (See Figure 1). Each patient thus served as her own control.

### Results

The mean age of the 42 subjects was 30.9 (range from 19 to 62) 32 (76%) had menstrual cycles, 7 (17%) were postpartum and 3 (7%) were menopausal.

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Cytobrush used in preparation of cervical smears.

7 of the 42 samples (17%) taken by the cotton tipped applicator showed the presence of endocervical cells, whereas 41 of the 42 samples (97.6%) taken by the Cytobrush showed the presence of endocervical cells. This difference in the yield of endocervical cells is statistically highly significant ( $p < 0.001$ ). It is also significant to note that in the 3 smears of menopausal patients, endocervical cells were obtained by the Cytobrush but not by the cotton swab. 37 (88%) subjects had a Class I Pap smear. 3 (17%) had a Class II Pap Smear and 1 patient (2.4%) had a Class III Pap Smear. It is interesting to note that in the 4 patients with Class II & III smears, endocervical cells were present only with the Cytobrush technique and not with the cotton swab collection method. Coincidental findings of monilia, trichomonas and condyloma infections were seen in 2, 2 and 1 subjects respectively. 12 of the 42 smears (29%) had changes of inflammation and metaplasia.

#### Discussion

Since 90% of cervical cancers originate in the Transformation zone area, it is essential that the cell sample must be representative, containing a generous amount of material from the T-Zone. The presence of endocervical cells in abundance ensures that a sample has been obtained from the T-Zone.

In our study the incidence of obtaining endocervical cells by the Cytobrush was 41/42 (97.6%) and by cotton swab technique was 7/42 (17%). This is comparable to the study of Trimboos and Arentz (1986) where it was 27/30 (90%) & 9/30 (30%) respectively. Since the adequacy of a smear is judged by the presence of endocervical cells, the Cytobrush technique eliminates the need for repeat smears, ultimately decreasing workload, cost and the number of false negative smears.

The Cytobrush technique may also have important implications in detection of adenocarcinomas of the cervix as the incidence of this disease has been on the rise at least in some countries like the Netherlands (Ketting-1981). Also immature diagnostic cells are picked up more frequently with the Cytobrush (Boon et al 1986). The smears prepared by the Cytobrush are superior in quality as the brush releases the cells easily on to the slide. The fibres of the cotton swab tend to entangle the cells.

Boon et al (1986) carried out a large study comparing smears obtained by the combined spatula - Cytobrush and by spatula alone and showed that 98% of smears by the combined technique were adequate whereas only 84% with the spatula alone technique were adequate. Also there were large differences between the results obtained by various doctors with a low score of 43% and a high score of 93% with the spatula alone whereas with the combined technique the differences in the results obtained by different doctors were negligible. Also the combined method yielded a higher cytologically positive diagnosis, 0.75% as compared to 0.38% ( $p < 0.01$ ).

For menopausal patients, where the T-zone recedes cranially, the Cytobrush technique is better as it picks up endocervicals more frequently. This fact was well established in our study, where in all three menopausal subjects, endocervicals were present with the Cytobrush but not with the cotton swab technique.

