



Fig. 1. Wound covered with Omiderm™ photographed on the day after dermabrasion.

Both dressings were placed immediately after operation on the moist debraded surface, overlapping 1 cm onto the normal skin. The edges of the sheets were moistened slightly with saline to increase adherence to the surrounding dry intact skin. The treated surface was pressed out with curved scissors several times, allowing the dressing to stick to the surfaces without too much subsurface liquid accumulating. The two coverings were then allowed to dry. The next day, if necessary, drainage was accomplished with syringe or by slitting the membrane slightly. The coverings were removed after 7 days following softening by wet dressings with saline.

Cervical Signs of HPV Infection in PAP-smear Negative Women with External Genital Warts

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Forty-eight women with external genital warts, all with normal cervical cytological PAP smears, were examined by means of colposcopy. One cervical biopsy for histological evaluation was taken from each woman, irrespective of the colposcopic findings. Koilocytosis was detected in 18/48 (38%) and dysplasia (CIN-1) in 3/48 (6%) of the patients. The presence of aceto-white lesions on the cervix was significantly associated with abnormal histology; 12 of 17 (71%) aceto-white lesions and 8 to 31 (26%) normal-appearing cervixes showed histological changes indicating HPV infection ($p < 0.01$). Women with koilocytosis and dysplasia had genital warts for a mean of 201 days compared with 79

RESULTS

Omiderm™ adhered satisfactorily to the wet, bleeding surface. Good haemostasis was obtained. The postoperative results were the same on both sides. No difference was noticed concerning pain, infection, removability or healing time. Our results show that Omiderm™ is well suited as a dressing following skin planing.

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days in women with normal cervical histology ($p < 0.01$). It is concluded that even the clinically normal appearing cervix frequently is a reservoir for HPV and that colposcopy should be a routine procedure in women with external genital warts, irrespective of the result of the PAP smear, to provide a basis for proper counselling and individual therapy.

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Table I. Demographic and sexual data of the study population compared with the histopathological diagnosis

	Normal histology <i>n</i> = 28	Abnormal histology (koilocytosis and/or dysplasia) <i>n</i> = 20
Average age (years)	24.2	24.2
Duration of genital warts (days)	79***	201***
Herpes genitalis	2 (7%)	1 (5%)
Other sexually transmitted diseases*	9 (32%)	9 (45%)
Smoking**	14 (50%)	7 (35%)

* Gonorrhoea, chlamydia, trichomoniasis.

** ≥ 10 cigarettes daily for at least 6 months.

*** $p < 0.01$.

Women with external genital warts and female consorts of men with penile genital warts have a high incidence of associated cervical intra-epithelial neoplasia (CIN) (1–3).

CIN lesions are often diagnosed or suspected by abnormal smears showing koilocytosis or dysplasia. Colposcopic evaluation is recommended in all patients with vulval warts and abnormal cervical smears (4), whereas colposcopy is not a routine procedure in women with genital warts and normal PAP smear.

The risk for failure to identify cervical HPV infection with those current procedures prompted us to examine a group of women with external genital warts, all having negative cervical PAP smears for associated cervical HPV infection using colposcopy and histological evaluation irrespective of the colposcopic findings.

MATERIAL AND METHODS

In May and June 1988, 48 women with external genital warts attending a VD-clinic in Copenhagen were referred for colposcopic evaluation. All women were PAP-smear negative, had no signs or symptoms of vaginitis, and routine tests for gonorrhoea and chlamydia were negative. Routine visual examination of the vagina and cervix did not indicate the presence of HPV infection.

Each woman in the study group was examined under the illuminated magnification of the colposcope, and a colposcopic photo of the cervix was taken before and after application of 5% aqueous acetic acid. A colposcopically directed biopsy sample was taken from any lesion identified and, if the cervix

Table II. Colposcopic findings and histopathological diagnosis in 48 PAP-smear-negative women with external genital warts

Colposcopic findings	Histopathological diagnosis		
	Normal or inflammation	Koilocytosis or dysplasia	
Normal	23	8*	31
Aceto-white lesions	5	12**	17
Total	28	20	48

* Two patients had CIN-1 without associated koilocytosis.

** One patient had CIN-1 with associated koilocytosis.

$p < 0.01$.

appeared normal, a single biopsy was taken randomly from the transformation zone. The cervical biopsy specimen was fixed in 10% phosphate-buffered formalin and the paraffin sections were stained with haematoxylin and eosin. The sections were examined by the same pathologist, without any knowledge of the colposcopic findings. Koilocytosis was diagnosed according to Reid et al. (5).

Comparison between groups was made by the χ^2 -method and Student's *t*-test. *P*-values less than 0.05 were considered significant.

RESULTS

The demographic and sexual data of the study population are shown in Table I.

Abnormal colposcopic findings with aceto-white lesions were diagnosed in 17 (35%) of 48 women examined. Histological evaluation of biopsies from these 17 lesions showed koilocytosis in 12 and in one case with associated CIN-1 (Table II). Koilocytosis was seen in 6 and dysplasia (CIN-1) in two biopsies from 31 colposcopically normal appearing cervixes (Table II). However, the presence of aceto-white lesions was significantly associated with abnormal histology ($p < 0.01$).

There was no difference in the average age, smoking habits or number of sexually transmitted diseases among women with or without a histologically abnormal cervix (Table I). However, women with abnormal cervical histology had genital warts for a significantly ($p < 0.01$) longer period than women with normal histology (Table I).

DISCUSSION

This study shows that an unexpected large number of women with external genital warts and a negative

PAP smear have in fact signs suggesting the presence of cervical HPV infection. The finding of koilocytosis and/or dysplasia in 20 (42%) of the 48 women examined is probably a minimum. Cervical signs of HPV infection could probably be diagnosed even more frequently if multiple biopsies were taken. Moreover, women with an abnormal PAP smear, showing koilocytosis and/or dysplasia, were excluded from this study. A negative PAP smear in women with external genital warts therefore does not exclude cervical HPV infection.

In this respect it is interesting to note that women with external warts of short duration have a lower frequency of signs of cervical HPV infection. One might fear that these women would ultimately develop a cervical focus of HPV.

It is surprising that histologic changes indicating HPV infection could be demonstrated by taking only one biopsy in nearly one-third of women with colposcopically normal cervixes. Asymptomatic viral shedding, a possibility in these women as well as in women with aceto-white lesions, presents serious problems with regard to both treatment and counselling. Asymptomatic cervical infection clearly constitutes a potential reservoir of HPV, which in part may explain the high frequency of recurrence of external genital warts in spite of rigorous treatment modalities (6, 7).

The more severe cervical dysplasias (CIN-2 and CIN-3), which colposcopically are often associated with punctation and mosaicism, were not seen in our study population. Women with such lesions probably had a positive PAP smear examination and were subsequently excluded from the study.

The high frequency of signs of cervical HPV infection in women with external genital warts raises at least two essential questions:

1) Should cervical aceto-white lesions be treated with CO₂-laser, cryotherapy, interferon and/or podophyllin, or merely be observed for spontaneous regression or progression? To our best knowledge, no controlled clinical treatment trials have been performed in women with this type of isolated cervical HPV infection.

Prospective studies have shown spontaneous progression of cervical warty atypia in 13–15%, but resolution in 25–50% of the cases (8, 9).

2) How infectious are these lesions? So far this question has not been elucidated, and further epidemiological studies are needed. Until such data are available, we recommend continuation of the usual treatment for external genital warts. In addition, our data indicate that it is advisable to perform colposcopy, irrespective of the results of the PAP smear, in order to provide a basis for proper individual counselling and therapy.

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