

The role of the mode of delivery in the alteration of intrapartum pathological cervical cytologic findings during the postpartum period

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Summary

Objective: The aim of the study was to determine whether abnormal antepartum cervical cytologic findings change in the postpartum period and the relation of this alteration to the mode of delivery.

Study design: Between 1991 and 2000, 192 pregnant women with antepartum abnormal cervical cytology were identified; complete demographic, clinical and cytologic reports were available for 90 of them. Papanicolaou smear tests were collected and separated in three groups using the Bethesda classification system (ASCUS, L-SIL and H-SIL).

Results: Of the 90 women, 52 (61.1%) were delivered vaginally and 38 (38.9%) by cesarean section. No difference was found between women delivered vaginally and those delivered by cesarean section, regarding age, parity and smoking history. The overall postpartum regression rate for the 20 women with antepartum H-SIL cells was 45%. Of the 12 women with H-SIL cells who were delivered vaginally, eight (66.6%) showed regression in the postpartum period while this regression was achieved only in one (12.5%) woman, who was delivered by cesarean section ($p < 0.002$).

Conclusion: Postpartum spontaneous regression of suspicious Papanicolaou smears consistent with H-SIL occurs with increased frequency among women who are delivered vaginally compared to those delivered by cesarean section.

Key words: Cervical intraepithelial neoplasia; Pap test; Mode of delivery; Pregnancy.

Introduction

The incidence of cervical intraepithelial lesions has gradually increased among young women [1, 2], as well as among pregnant women in recent years [3]. Abnormal Papanicolaou smears are found in an incidence of 0.5 to 3% among gravid women, and screening for detection of such suspicious smears has become a part of prenatal care [4].

Few studies have reported the effect of the mode of delivery on the alteration of intrapartum abnormal cervical cytological findings during the postpartum period [5, 6].

The aim of this study was to investigate whether abnormal cytologic finding presented any alteration in the postpartum period and if this alteration has any relation to the mode of delivery.

Materials and Methods

Between 1991 and 2000, 192 women with abnormal cytologic findings at their initial antepartum visit were identified through clinical and pathologic data logs. Data were collected for age, gravidity, parity, history of sexually transmitted diseases, smoking history, colposcopic evaluation with antepartum and postpartum biopsies, when needed, cytologic and historic reports of pathologic cervical conditions and postpartum treatment and follow-up of abnormal cervical cytologic findings. Complete demographic, clinical and cytologic reports in the antepartum and postpartum period were available for 90 patients.

Using the Bethesda classification system the initial antepartum cytologic data were separated into three groups: atypical squamous cells of undetermined significance (ASCUS), low-grade squamous intraepithelial lesions (LSIL) and high-grade squamous intraepithelial lesions (HSIL).

Antepartum and postpartum cervical cytologic data were compared between women who were delivered vaginally and those delivered by cesarean section. Cervical cytologic data were collected in the 1st trimester of pregnancy and until 16 weeks from the date of delivery.

Regression was defined as either complete normalization of the cytologic findings, regression of HSIL to LSIL, or LSIL to ASCUS. A second Papanicolaou smear was obtained eight to 16 weeks postpartum, when local inflammatory reactions and reparatory processes had been resolved.

Statistical analysis was performed by means of the χ^2 test as appropriate. All data were managed and analyzed using a statistical package for Windows. A probability value of < 0.05 was considered statistically significant.

Results

Complete demographic, clinical and cytologic reports in the antepartum and postpartum period were available for 90 women. At their initial antepartum visit 60 women had ASCUS, ten had LSIL and 20 had HSIL. The age, smoking history, gravity, as well as the cytologic findings of our study population are shown in Table 1.

Of the 60 women with cytologic findings of ASCUS, 39 (65%) were delivered vaginally and 21 (35%) by cesa-

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Table 1. — Clinical and cytologic findings in the studied population

Cytologic findings	Age (years)	Smokers	Gravity
ASCUS (60 subjects)	< 20: 2 (3.33%)	20/60 (33.3%)	I. 40 (66.66%)
	20-30: 53 (88.33%)		II. 12 (20%)
	> 30: 5 (8.33%)		III. 8 (13.33%)
L-SIL (10 subjects)	< 20: 0	3/10 (30%)	I. 6 (60%)
	20-30: 9 (90%)		II. 3 (30%)
	> 30: 1 (10%)		III. 1 (10%)
H-SIL (20 subjects)	< 20: 1 (5%)	6/20 (30%)	I. 12 (60%)
	20-30: 17 (85%)		II. 4 (20%)
	> 30: 2 (10%)		III. 4 (20%)

rean section. Normalization of Papanicolaou smears in the postpartum period was observed in 30 (50%) women: 20 (51.28%) were delivered vaginally versus ten (47.61%) who were delivered by cesarean section ($p > 0.05$). Aggression of the findings was noted in two (5.12%) women who were delivered vaginally versus two (9.52%) delivered by cesarean section, ($p > 0.05$) (Table 2a).

On the ten women with cytologic findings of L-SIL, seven (70%) were delivered vaginally and three (30%) by cesarean section. Regression was noted in three (30%) of them: in two (28.5%) who were delivered vaginally versus one (33.3%) who was delivered by cesarean section ($p > 0.05$). In the remaining seven (70%) women, five (71.5%) were delivered vaginally and two (66.6%) by cesarean section ($p > 0.05$); cytologic findings remained unchanged postpartum (Table 2b).

As shown in Table 2c, of the 20 women with findings of H-SIL, 12 (60%) women were delivered vaginally and eight (40%) by cesarean section. A statistical difference ($p < 0.05$) was found in the cytologic regression rate between those women who were delivered vaginally (66.6%) compared to those delivered by cesarean section

(12.5%). No significant difference in the aggression rate of H-SIL cytologic findings postpartum was observed between women who were delivered vaginally and those who were delivered by cesarean section one (8.33%) vs one (12.5%) respectively, $p > 0.05$. Both women were third-gravidas and they developed a microinvasive cancer which was treated with cone biopsy within 16 weeks of delivery.

Of the eight women with H-SIL delivered by cesarean section, non entered the second stage of labor. The causes of cesarean section were: previous cesarean section (4 cases), FHR abnormalities (3 cases) and placental abruption (1 case).

The overall aggression rate of Pap smears was 6.66%.

Discussion

We know that both cervical stroma and glands undergo physiologic changes during pregnancy; these changes result in squamous metaplasia and the presence of cells with hypervacuolated cytoplasm and atypical nuclei. Degenerated decidual or trophoblastic cells can also shed from the endometrium and mimic HSIL [7].

Postpartum records were not available for 102 out of 192 women because of noncompliance with postpartum appointments. Of the women with antepartum abnormal cytologic findings, 90 underwent a postpartum follow-up evaluation. Postpartum evaluation consisted of a Pap smear for all women with biopsy and colposcopy when indicated.

According to many authors, the reported spontaneous regression rate among women with H-SIL cytologic findings varies from 6 to 35.1% in non-pregnant women [8] and 25 to 70% postpartum [6, 9-13]. In our study the overall postpartum regression rate for women with H-SIL was 44%.

Table 2.

a. Mode of delivery and alteration of abnormal Pap smears postpartum in patients with ASCUS

Vaginal labor 39 (65%)			Cesarean section 21 (35%)		
Regression	Same	Aggression	Regression	Same	Aggression
20 (51.28%)*	7 (43.58%)**	2 (5.12%***)	10 (47.61%)*	9 (42.85%)**	2 (9.52%***)

* / ** / ***: $p > 0.05$

b. Mode of delivery and alteration of abnormal Pap smears postpartum in patients with L-SIL

Vaginal labor 7 (70%)			Cesarean section 3 (30%)		
Regression	Same	Aggression	Regression	Same	Aggression
2 (28.5%)*	5 (71.5%)**	0	1 (33.3%)*	2 (66.6%)**	0

* / **: $p > 0.05$

c. Mode of delivery and alteration of abnormal Pap smears postpartum in patients with H-SIL

Vaginal labor 12 (60%)			Cesarean section 8 (40%)		
Regression	Same	Aggression	Regression	Same	Aggression
8 (66.6%)*	3 (25%)**	1 (8.33%***)	1 (12.5%)*	6 (75%)**	1 (12.5%***)

*: $p < 0.05$, ** / ***: $p > 0.05$

According to Yost *et al.* [6] there were similar high postpartum regression rates despite the route of delivery, concerning lesions of CIN II and III, while in the study of Ahdoot *et al.* [5] no significant difference in regression rate was seen among women with cytologic findings of ASCUS of L-SIL. In our study, no statistically significant difference was found in regression rate in the puerperium among women with the pre-referred cytologic findings. We consider that such findings do not require colposcopic evaluation during pregnancy; furthermore, according to various studies, taking into account the epidemiologic characteristics of low-grade lesions, a high rate (62%) will spontaneously resolve, even without therapy [9, 14-16]. On the other hand if the pap smears show CIN III or there are indications of cervical carcinoma in situ, colposcopy is recommended to be followed by a directed biopsy and complementary cytology [17, 18]. In such cases, management must be more aggressive, given the relatively high rate of underestimation of the disease by both cytology and colposcopic impression [19], the high persistence rate of CIN in pregnancy [12] and/or the inability to predict which of these lesions are more likely to regress [6].

The histologically proven progression in pregnancy in our study was 6.66%, while according to Woodrow *et al.* [29] and Yost *et al.* [6] the rate was 7%, Coppola *et al.* [19] 8%, Penna *et al.* [2] 28.5%, Giraud *et al.* [13] 31.25% and Palle *et al.* [12] 28%.

Many authors reported that none of the women in their study developed microinvasive or invasive cancer between antenatal assessment and postpartum review [5, 20]. On the contrary, Palle *et al.* [12] found that two out of 305 women developed microinvasive carcinoma in the postpartum period.

According to our results, two out of 90 studied women developed microinvasive cancer, both of when were third-gravidas. This finding probably suggests the high incidence of recurrence of cervical dysplasia in women with more than two children.

We also found a high postpartum regression rate among women with vaginal delivery compared to those who were delivered by cesarean section. Thus we consider, as do other authors [5], that this regression may be due to the route of delivery. On the contrary, Coppola *et al.* [19] did not find any difference in the regression rate between women who had a vaginal delivery compared to those who were delivered by cesarean section.

Some authors have suggested that the observed regression of the H-SIL findings of Pap smears during the puerperium are probably attributed to impaired immune responses, as decreased numbers of Langerhans cells and T-helper cells are found in materials after cervical biopsies [21]. Others believed that localized inflammatory response after mechanical cervical dilatation may be the explanation [10]. We believe that traumatic cervical desquamation and subsequent stimulation of local immune factors during the 2nd stage of labor is the main factor of such a regression.

However, further clinical and immunologic studies are needed to confirm these theories.

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