

## POST PARTUM VAGINAL SMEAR IN LACTATING AND NON-LACTATING

by

NAWAL KISHORE,\* M.S., F.A.C.S. (U.S.A.),

BARUN SARKAR,\*\* M.S.,

LILY LALIT,\*\*\* M.S.

and

MANJU SRIVASTAVA,\*\*\*\* M.S.

### *Introduction*

The misconception that lactational amenorrhoea is a 'safe period', is prevalent, not only amongst the rural population but to a lesser extent also amongst the urban population.

The immediate postpartum is marked by a temporary ovarian failure, gradually building up to a restoration of hormonal status, culminating in menstruation.

To offer complete contraceptive protection it is important to know the earliest period of ovulation return in these cases. The present study was conducted to study vaginal smears with a view to assess the returns of ovulation in lactating and non-lactating mothers.

### *Material and Methods*

The present study comprises of 125 cases of postpartum amenorrhoea of which 100 cases were of lactational amenorrhoea, while the remaining 25 cases were of non-lactational amenorrhoea. Vaginal smears were taken from all the

cases. In evaluating the smears, the following criteria were used: maturation index, maturation value and karyopyknotic index. Oestrogenic effect of vaginal epithelium was studied according to the colpopycytological count obtained from smears.

### *Observation*

One hundred lactating and 25 non-lactating cases of amenorrhoea were observed, for periods, varying from 2nd postpartum week to 2 years.

Maximum number of cases were primiparae and in the age group of 20-24 years in both groups.

In lactating women, 53% of cases belonged to S.E. group IV, 23% to group III, 20% group II and only 4% to group I. Of the non-lactating women, 48% were in group IV, 32% in group III, 18% in group II and 2% in group I.

It was seen that in lactating women oestrogen effect on vaginal epithelium was seen earlier in the good nutritional group. Parabasal cells were present in the poor nutritional status patients during all the periods of study, while they disappeared after 9 months in group II and after 3 months in group I.

In the non-lactating group, reversion of the vaginal smear was slowest in the

---

\*Prof. & Head of the Department.

\*\*Lecturer.

\*\*\*Demonstrator.

\*\*\*\*Resident Gynaecologist.

\*\*\*\*\*Registrar, Department of Obstetrics & Gynaecology, S. N. Medical College, Agra.

Accepted for publication on 19-8-1975.

poor nutritional group. The parabasal cells disappeared earlier in group IV and III. They were not seen after 15 days. But in poor nutritional group parabasal cells were seen in 15 days to 3 months

cells till 12 months and thereafter the number of parabasal cells started increasing. Maximum oestrogenic activity was seen during 10-12 months period, which started falling after that period (Table I).

TABLE I

*Mean Maturation Index Vaginal Cytology During Different Periods of Lactational Amenorrhoea*

S.N.	Duration of postnatal period in months	No. of vaginal smears	Average colpocytological count		
			Parabasal	Intermediate	Superficial
1.	Upto 15 days	17	37.29	55.77	6.94
2.	15 days—3 months	64	10.2	74.80	15.00
3.	4 months—6 "	15	2.73	65.86	31.41
4.	7 months—9 "	9	0	83.20	16.4
5.	10 months—12 "	14	0.35	58.50	41.15
6.	13 months & above	12	1.66	69.50	28.84

Total number of vaginal smears—131.

period.

In lactating group of women the atrophic smear of 15 days reverted to the mild oestrogenic type during 15 days to 3 months period in both primiparous and multiparous women. Parabasal cells were seen throughout all the periods in the multiparous group of patients, while no parabasal cells were seen in the primiparous group of patients after 6 months.

In non-lactating women, the disappearance of parabasal cells was observed earlier in the primiparous women i.e. during 15 days to 3 months period, in comparison to multiparous women. The percentage of superficial cells was also greater in the primiparous group as compared to the multiparous group of women.

*Mean Maturation Index Cytology During Different Periods of Lactational Amenorrhoea:*

The total number of vaginal smears taken from 100 cases were 131. There was a steady decrease in the parabasal

In non-lactating postpartum amenorrhoeic women, there was a marked remission of the atrophic type of smear which was found during 15 days period, to good oestrogenic effect during 15 days to 3 months period. There was only one case of 4-6 months period which showed a decrease in the estrogenic effect as depicted by the number of superficial cells. (Table II).

It was seen that at 1½ months period, the karyopyknotic index was very low (11.1%) and the parabasal cells were 29.1%. At 3 months period, maturation value improved due to increase in the intermediate cells. At 6 months period, the G.I. improved considerably being 36.3%. At 12 months period, there was further improvement in the K.I. but above 1 year period, there was a slight fall in the K.I. (35.83%).

In non-lactating group at 1½ months period, the K.I. was 40.8% and the endometrium was 100% proliferative. At 3 months period the K.I. fell to 27.4%.

TABLE II  
Mean Maturation Index of Vaginal Cytology During Different Periods of Non-lactational Amenorrhoea

S.N.	Duration of post-natal period in months	No. of vaginal smears	Average colpocytological count		
			Parabasal	Intermediate	Superficial
1.	Upto 15 days	11	4.4	62.4	33.2
2.	15 days—3 months	25	0.04	67.2	32.76
3.	4 months—6 months	1	0.0	80.0	20.0

Total number of vaginal smears—37

*Return of Ovulation in the Postpartum Period in Lactating and Non-lactating Women as Judged by Vaginal Cytology*

It was seen that the return of ovulation during lactational period in lactating women occurred in 10% of women and in non-lactating women, it occurred in 16% of the cases. (Table III).

cating that the return of the oestrogenic function of the ovaries in the postpartum period is earlier in the primiparous women than in the multiparous women.

Lactation acts as a drain on the natural resources of the women when the organism is subjected to unusual demand. Thus, amenorrhoea lasts longer in wo-

TABLE III  
Return of Ovulation in the Postpartum Period in Lactating and Non-lactating Women as Judged by Vaginal Cytology

Type of patients	No. of cases and percentage	Mean return of Ovulation in months	
		Vaginal smear	Endometrial Biopsy
1. Lactating women	10 (10%)	2 months	3.67 months
2. Non-lactating women	4 (16%)	1 month	3 months

*Discussion*

The immediate postpartum period is characterised by abrupt traumatic desquamation of the endometrium and rapidly decreasing hormonal levels. The period of lactation, on the other hand, can be described as one of tissue regeneration and slow stabilisation of the hormonal process. Vaginal cytology provides a simple and easy way of assessing the ovarian function, which is held in abeyance in the postpartum period. Parity seems to exert its direct influence on the postpartum vaginal smear, indi-

men who are of poor nutritional status and general health than physically strong women of good nutritional status. Oestrogen effect on the vaginal epithelium is seen earlier in the good nutritional status group of women. Similar findings were reported by others (Janey 1945; Pundel 1955; Gopalan 1958; Peters *et al* 1958; and Malkani and Mirchandani 1960).

The most striking features of the immediate postpartum smears in our study were—

(1) Dirty smear with diversity of cellular element. Parabasal cells predominating with intermingling of intermediate cells, erythrocytes, leucocytes and few muscle fibres.

(2) Marked degenerative changes amounting to necrosis of cellular element.

(3) Replacement of navicular cells by postnatal cells.

(4) Arrangement of cells in sheets.

(5) Nuclear and cytoplasmic changes mimicing malignancy which are reversible.

In lactating women, there was steady decrease in number of parabasal cells till 12 months with subsequent increase. Maximum oestrogenic activity was observed between 10-12 months period or even later in prolonged lactation. Upto 3 months there was shift of maturation to the centre indicating complete oestrogenic deficiency. Between 4-6 months, the marked reduction in the number of parabasal cells was observed. The cornification index started increasing (average 31.41%) intermediate cells still predominating.

During 10-12 months period, the vaginal smear picture gave evidence of good oestrogenic effect in our series as well as Achari and Khanam series (1966), while in Das and Mitra (1966) series, the reversion of the smear to mild oestrogenic effect had already started. We noted similar effects a little later after 13 months, when the cornification index, started to fall and the sprinkling of the parabasal cells in the smear appeared.

In the non-lactating patients there was a marked remission of the atrophic type of smear, which was seen during the 15 days period in this group to a good oestrogenic effect without the intervening lactational type of smear which is des-

cribed earlier. This is due to the absence of inhibitory influence of lactation acting on the hypothalamo-pituitary-ovarian axis.

The return of ovulation in the postpartum period in lactating women occurred in 10% of cases, while it occurred in 16% of cases in non-lactational amenorrhoeic group.

Das and Mitra, (1966), noticed that the evidence of ovulation as indicated by secretory endometrium, glycogen activity and lowering of alkaline phosphatase was demonstrated in 11.8% of cases during lactational amenorrhoea.

Cronin, (1968), after studying the basal body temperature for the return of ovulation came to the conclusion that the mean time for the first ovulation was 73.5 days in the non-lactators. Sharman (1966) using endometrial biopsy did not find evidence of ovulation before the 7th postpartum week in non-lactators, and the 13th week in the lactators.

#### *Summary and Conclusion*

(1) In the immediate postpartum period, atrophic type of smear was obtained, which contrasted with the smear obtained during pregnancy, indicating the fall in concentration of ovarian hormones during puerperium.

(2) The typical malignant-like changes, which were very common in the vaginal cells during postpartum period quickly returned to normal after some time.

(3) The cornification index increased till 1 year but later, if the lactation was prolonged, it fell slightly.

(4) In the non-lactating women, the ovaries started functioning much earlier than in the lactating women, showing the inhibitory effect produced by lactation on

the return of ovarian function to normalcy.

(5) Prolonged lactation has a suppressive effect over the ovarian activity, so that the concentration of the hormone production fell as judged by vaginal smear and endometrial biopsies.

(6) The return of ovarian activity was later in multiparous than in primiparous women.

(7) The return of ovarian activity occurred later in low nutritional status group as compared to the fair and good status group of women.

(8) Ovulation occurred in 10% of the cases in lactating women during the lactational amenorrhoea and in 16% in non-lactating women in the postpartum period.

(9) The return of ovulation in the non-lactating women as judged by the vagi-

nal smears, is on an average after 1 month.

#### References

1. Achari, K. and Khanam, W.: J. Obst. & Gynec. of India, 16: 657, 1966.
2. Cronin, T. J.: Lancet, 2: 422, 1968.
3. Das, S. K. and Mitra, A. K.: J. Obst. & Gynec. of India. 16: 156, 1966.
4. Gopalan, C.: Ind. J. Med. Research. 46: 317, 1958.
5. Jamny, J. C.: Medi. Gynaecology. Saunders, Philadelphia, 1945.
6. Malkani, P. K. and Mirchandani, J. J.: J. Obst. & Gynec. of India, 11: 121, 1960.
7. Peters, H., Israel, S. and Purushottam, S.: Fertil. & Steril., 9: 134, 1958.
8. Pundel, J. P.: Bull. Fied. Soc. Gynec. et Obst., 7: 157, 1955.
9. Sharman, A.: Reproductive physiology of Post partum period, Edinbergh, 1966 as Quoted by Cronin, T. J.: Lancet, 2: 422, 1968.

---

*See Figs. on Art Paper I-II*