

## ROLE OF ENDOMETRIAL ASPIRATION CYTOLOGY IN INVESTIGATION OF INFERTILITY

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### SUMMARY

An attempt to detect ovulation in 220 infertile women has been made in this study by endometrial aspiration cytology with a metal canula, and the results have been compared with that of endometrial curettage. The overall accuracy was 87%. In the secretory phase the accuracy was 90.8% but in the proliferative phase it was 85%. Aspiration cytology is a reliable procedure to detect ovulation, and does not carry any risk. In contrast, endometrial curettage involves hospitalisation, high cost, risk of anaesthesia and complication of the operative procedure. Moreover aspiration can be repeated in many cycles and many times in the same cycle. But it cannot replace biopsy which also diagnoses other disease processes.

### Introduction

A substantial number of Gynaecological admissions is done for investigation of infertility. Usually a battery of tests are done to detect where lies the defect. Procedures such as cervical mucus study, BBT record, serial vaginal smear examination, endometrial biopsy, measurement of LH surge by RIA and estimation of plasma progesterone are tried to detect ovulation. But these methods are time consuming, expensive and are not available always. Till date endo-

metrial curettage is the most commonly used method for detection of ovulation. But after Novak (1935) reported about diagnostic endometrial aspiration and later on Palmer's (1950) comparative report about endometrial aspiration and curettage, the former has established its position as a diagnostic tool. But not much work has been done regarding its role in detection of ovulation. So a prospective study was undertaken to compare its role with that of endometrial biopsy in detection of ovulation.

### Material and Methods

During January 1982 to January 1984, 220 infertile women were investigated in

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Unit III of the Obst. and Gynaec. Dept of VSS Medical College Hospital, Burla. There were 160 cases of Primary and 60 cases of Secondary infertility. The uterine aspiration was done by a metal cannula. The aspirated material was spread on a slide and immediately fixed with 95% ethyl alcohol to be stained later. This was followed by a dilatation and curettage under anaesthesia. The endometrium was preserved in 10% formolsaline for histological study. This study was conducted in one cycle in which both the procedures were done, and the results compared.

*Observations*

Normal menstrual cycle was present in 64% and 72% primary and secondary infertility cases respectively. Amenorrhoea

was the most common abnormal presentation in primary infertility whereas menorrhagia in the secondary infertility cases (Table I).

In Table II, the results of histopathological examination of the endometrium are given. The material was inadequate in about 6 cases. Secretory changes were observed in 73% and 58% of primary and secondary infertility cases respectively. Tuberculous endometritis was detected in 5.6% of the primary infertility whereas none of the secondary infertility had this abnormality.

The interpretation of the aspiration material was done according to Grubb (1977). In secretory phase, endometrial cells can be identified by a large distinct secretory vacuole occupying almost all the cytoplasm and distorting the nucleus. The proliferative type of cells are closely

TABLE I  
*Menstrual Pattern*

	Primary		Secondary		Total
	N.	%	N.	%	
N.M.C.	102	63.75	43	71.67	145
Scanty Periods	16	10	7	11.67	23
Irregular Cycles	9	5.63	x	x	9
Menorrhagia	14	8.75	7	11.67	21
Amenorrhoea	19	11.88	3	5	22
Total	160	100.1	60	100.1	220

TABLE II  
*Histopathology of Endometrium*

Type of Endometrium	Primary		Secondary		Total
	N.	%	N.	%	
Secretory	117	73.13	35	58.33	152
Non-secretory	29	18.13	24	40	53
Tuberculosis	9	5.63	x	x	9
Inadequate	5	3.13	1	1.67	6
Total	160		60		220



packed and have a well preserved, round, hyperchromatic nucleus and very little cytoplasm. Tuberculous endometritis was diagnosed by hypocellularity of the smear in the presence of histiocytes, Langhans type of giant cells and epithelioid cells. In 68% of primary infertility and 58% of the secondary, there was secretory endometrium, whereas in 8% of primary infertility cases tuberculous changes were detected by cytology. Only in 3.64%, adequate material was not obtained for interpretation and mostly they were cases of menorrhagia. So the material was inadequate in 3.64% by aspiration and in 2.73% cases by curettage. This difference was not statistically significant ( $p > .05$ ) (Table III).

Table IV shows the correlation between cytological smear and endometrial biopsy. Secretory endometrium was found in 138 (90.8%) of cases both cyto-

logically and by biopsy. In another 14 cases biopsy detected secretory endometrium. Cytology detected 6 cases as secretory but they were proliferative by biopsy. Similarly, 10 cases were proliferative by cytology where biopsy report was secretory. In 84.9% cases proliferative phase was detected by both methods. Of all the cases of tuberculous endometritis, 88.9% was detected by both procedures, but cytology detected 5 more cases of this abnormality. The detailed findings about this is being communicated in a separate paper. The material was inadequate in 5 cases in both procedures, in one case by biopsy only and in 3 cases by cytology only. So by correlating the accuracy with histology, in 87% cases the histology tallies with cytology and the rest do not tally. ( $p < .001$ ). This suggests that biopsy is still the superior method for hormonal assessment of endometrium.

TABLE III  
*Type of Endometrium by Aspiration Cytology*

Type of Endometrium	Primary		Secondary		Total
	N.	%	N	%	
Secretory	109	68.13	35	58.33	144
Non-secretory	35	21.88	20	33.33	55
Tuberculosis	13	8.13	x	x	13
Inadequate	3	1.88	5	8.33	8
Total	160		60		220

TABLE IV  
*Correlation Between Cytological Smear and Endometrial Biopsy*

Type of Endometrium	Both		Only biopsy	Only smear
	N	%		
Secretory	138	90.8	14	6
Proliferative	45	84.9	8	10
Tuberculosis	8	88.9	1	5
Inadequate	5	83.3	1	3
Total	196	89	24	24 P < .001

TABLE V  
Accuracy of Cytology with Histology

Passing of Endometrium by Histology	Talies with Histology	Does not Tally
Proliferative	45	18
Secretory	138	20
Tuberculosis	8	6
Total	191	44
		P < .001

Discussion

The uterine aspiration for endometrial study is the simplest, easiest and most satisfactory of all aspiration methods (Baijal *et al* 1980; Fox *et al* 1962; Grub *et al* 1977 and Isancco *et al* 1975). The technique provides quite adequate material for cytological interpretation and with experience, the inadequacy of material decreases. Material adequacy in this study is similar to that of Isancco, 1975. Cytological assessment of the hormonal status of endometrium correlated well with histological findings in 87%. This correlation was 77% (Baijal *et al* 1980) and 100% (Fox *et al* 1965; Grubb *et al* 1977). Six cases (11.4%) of histologically proved proliferative phase were misdiagnosed as secretory by cytology whereas 6.4% were diagnosed as proli-

ferative by cytology whereas they were secretory in histology. This discrepancy also compares well with that of Fox *et al* (1962). Regarding the incidence of tuberculous endometritis and their detection by cytology, our results tally with those of Baijal *et al* (1980). But Nadakarni *et al* (1984) mention the superiority of histology in detection of endometrial tuberculosis.

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