

EVALUATION OF CYTOLOGICAL AND HISTOLOGICAL CHANGES BEFORE AND FOLLOWING THE USE OF INTRAUTERINE DEVICES

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SUMMARY

The cytologic and histologic findings from the present follow-up of 200 women have failed to show a higher incidence of dysplasia in IUD users. Cytologic atypias upto moderate dysplasia were noted. However, inflammation was more common in cervical smears of IUD users in comparison to non-users. Prolonged follow-up of present cases, particularly those harboring dysplasia and chronic endometritis, is to reach a definite conclusion regarding the oncogenic potential of intra-uterine devices.

Introduction

Current universal interest in Family Planning and control of the world wide enormous increase in population necessitates development of effective and safe methods of contraception. It goes without saying that methods and devices applied on a wide spread basis or even in individual cases must be proved safe as well as effective.

The non-carcinogenic property of polyethylene IUD is disputed. No abnormal cytomorphological changes have been reported due to the use of these devices (Aikat *et al* 1975, Affandi, 1976, Misra *et al* 1976, Luthra *et al* 1978). However few workers reported high incidence of suspicious smears (Ayre, 1965). Abrams 1966, Moyer and Mishell, 1971, Sammour *et al*

1967, Shahani and Kothari, 1973, and other investigators studied the endometrium among IUD users have concluded that there is no correlation between the occurrence of endometrial neoplasia and the use of IUDs. The present study was undertaken to ascertain the safety of these devices with reference to dysplasia and malignancy.

Material and Methods

The following devices were used by the 200 women in the study—Copper T-200, Lippes loop. The material comprised of 200 patients of age group of 20-40 years with a parity of 1 to 7 children. After taking complete history the women were examined clinically and smears were collected. Prior to insertion, smears were collected from three sites and stained according to Papanicolaous technique (1) vaginal smear from posterior vaginal pool, (2) endocervical swabs from endocervical canal, (3) endometrial aspirate

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from the uterine cavity. All the women were called for follow-up at 3 monthly intervals for vaginal and cervical smears but endometrial aspirate were collected only if they had any symptoms necessitating either removal or change of the device. The women wearing IUD, had come for the very first time to the hospital either because of some complication or for check-up were also included in this study and followed accordingly. The findings were compared with non-users of same age-group. Cytopathologic evaluation of the smears was done according to Papanicolaous classification laid down in 1954.

In this study cases were divided into four groups depending on the duration of use of device.

in 7 (3.5%) cases (6 mild and 1 moderate with trichomonas infection). Changes of carcinoma in situ or frank malignancy were not observed in any of the smears.

However on endometrial aspiration smear examination, only one case (0.50%) showed hyperplasia of endometrial cells (this patient was using IUD for more than 7 years), 11.50% showed inflammation and rest (88%) smears were normal. No case of malignancy was seen.

The most interesting finding was observed in the smears collected directly from the device after removal. In two smears large round to oval cells were seen. They were single showed abundant vacuolated cytoplasm and an eccentric

Groups	Duration of use of IUD for	No. of cases	%
Group I	Less than one year	77	38.50
Group II	One to two years	52	26.00
Group III	Two to three years	41	20.50
Group IV	More than three years	30	15.00
Total		200	100.00

Observations

The youngest women of the series was 20 years of age while the oldest one aged 40 years. The largest number of cases (49.20%) belonged to age group 26 to 30 years, parity three (34.80%) and middle social class.

The vaginal smear corresponded to the cyclic hormonal status of the women. Out of 200 smears 7.5% were inadequate, 60% were normal and 32.50% were inflammatory. Only 2 inflammatory smears showed presence of trichomonas vaginalis.

Endocervical smears showed that 128 (64%) were normal, 65 (32.50%) smear showed presence of dense inflammatory exudate. Trichomonas vaginalis was seen

large hyperchromatic nucleus. Chromatin clumping and multiple round nucleoli were also seen. These smears were classified as ATYPICAL SMEARS.

All other smears showed dense inflammatory exudate, red blood cells, macrophages and plasma cells. Foreign body type of giant cells were seen in 2 smears only. These were large cells with 15-20 nuclei and abundant pink cytoplasm.

One hundred and twenty cases (including 52 complicated cases) were subjected to endometrial biopsy, in which 80.83% showed normal pattern while 6.66% cases showed chronic endometritis, 3.33% showed hyperplasia. In 8.35% cases, tissue was inadequate for reporting.

Table I shows that pre-insertional

smear of 4 cases showed mild dysplasia. These cases were followed-up on subsequent visit, at the end of study no smear showed dysplastic changes. At the end of 6 months, one case of mild dysplasia was reported and which also regressed to normal. At 7 months other 2 cases of dysplasia were noted (one mild and one moderate) mild dysplastic smears became negative at the end of 11 months while moderate dysplastic smear remained as such.

All of these women whose initial smear showed inflammation were given local therapy and their 6 months follow-up revealed elimination of inflammation.

The incidence of inflammatory endometrial smear was little higher (11.50%) in our study in comparison to study of other authors (Engineer *et al*, 1976, Aikat and Chadda, 1980). The presence of mild inflammatory reaction has been considered as an inevitable result of foreign body reaction to the device.

TABLE I
Follow-up Results in Cases with Dysplasia

Period of follow-up in months	Total No. of cases	Type of Dysplasia		Disappearing after cryosurgery	
		Mild	Moderate	Within 6 months	7-12 months
Pre-insertional	4	4	—	3	1
1- 6 months	1	1	—	—	1
7-12 months	2	1	1*	—	1+1*

*Observed on 7th month, persisted on 12th month.

Discussion

In our series majority of cases belonged to age group 26 to 30 years (49.25%). The incidence of inflammation and dysplasia were noted increasingly in cases with high parity and low social class. This corresponds to the study of Wahi *et al* (1968). When cytological findings of IUD users and non-users of the same age-group were compared, it was noticed that the incidence of inflammation was more in IUD users (32.50%) comparing to non-users (14%). *Trichomonas Vaginalis* was seen in 2 smears. This can be explained by the fact that IUD being a foreign body induces inflammatory reaction (Wahi *et al* 1968, Rubenstein, 1974, Misra *et al* 1976).

Incidence of endometrial hyperplasia in our series was 0.50% only. A higher rate was observed by Engineer *et al* (2.6%). Moyer and Mishell (1971) concluded that there is no evidence of increased incidence of either benign or malignant endometrial neoplasm.

This study of endocervical smears indicated that there is no significant risk of an increased incidence of cervical dysplasia or carcinoma development in women using IUD for six years. This supposition gains strength from the fact that all 5 cases of initial mild dysplasias, 4 pre-insertional and one noted at first smear examination, were treated by cryosurgery, with device in situ, regressed to normal within 6-12 months. Similarly

two cases of dysplasias (one mild and one moderate) detected in follow-up smears during 6 months to 12 months use of the device, mild one regressed to normal and moderate one persisted inspite of cryosurgery (Table III). However, she had fresh infection of trichomonas vaginalis. It is well established that trichomonas produces dysplastic lesions in cervix and this moderate dysplasia might be due to this infection. The fate of moderate dysplasia whose follow-up is due can only answer the question whether retention of copper device may cause progression of dysplasia to neoplasia or not. There was no smear showing severe dysplasia, carcinoma in situ or invasive malignancy. Other workers have also reported that there are no significant changes in cervix after the use of IUD (Hagenfeldt, 1972, Affandi, 1976, Misra *et al*, 1976 and Luthra *et al*, 1978).

The atypical cells which were observed in two cases, also studied by Fornari (1974). Recently Gupta (1982) has reported the presence of these atypical cells in IUD users. It has been reported that the exact origin of these cells is not known. Some of them perhaps arise from endometrium and could also be histiocytic, endometrial stromal or metaplastic. Thus the use of an IUD may result in exfoliation of these atypical cells that can mimic serious epithelial neoplastic lesions and awareness of these IUD associated cytomorphologic alterations can help in the management of IUD acceptors.

Comparison of histopathological findings with clinical symptoms revealed that there was no appreciable correlation between the two. The complaints recorded most commonly in clinic charts of these women were heavy blood flow during menstruation, inter-menstrual spotting

and mucoid vaginal discharge. Bleeding in such cases was related to tissue disruption and disintegration, a result of the contact of an IUD with endometrium.

In cases where repeated endometrial biopsy were taken during their period of follow-up it was found that endometrial changes did not follow a consistent pattern. The patients who showed altered cellular or vascular response at one time did not necessarily continue to show the same changes at later times.

The biopsy of endometrium in IUD users usually reflected the corresponding menstrual phase, it supports the fact that IUD does not interfere with cyclic endometrial response to ovarian hormones.

Cytologic screening of 200 IUD users in our series had displayed absence of any neoplastic change in cervix and endometrium upto 6 years of use, only dysplastic changes were noted. So it is suggested that prolonged use of the device does not evoke significant dysplastic, pre-malignant and malignant changes of either cervix or endometrium.

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