Al-Azhar International Medical Journal

Volume 3 | Issue 12 Article 20

12-1-2022

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How to Cite This Article

Farg, Eslam; Ali, Samir; and Mostafa, Abd-Elmonsef (2022) "Cervical Cytologic and Colposcopic Changes in Cases Using Intrauterine Devices for Along Time," *Al-Azhar International Medical Journal*: Vol. 3: Iss. 12, Article 20.
DOI: https://doi.org/10.21608/aimj.2023.151816.2050

OPEN AIMJ ORIGINAL ARTICLE

Cervical Cytologic and Colposcopic Changes in Cases Using Intrauterine Devices for Along Time

Obstetrics & Gynecology

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Received *for publication July 22, 2022;* ***Accepted*** *December 31, 2022;* ***Published online*** *December 31, 2022.*

doi: *10.21608/aimj.2023.151816.2050*

Citation: *Eslam M. , Samir A. and Abd-Elmonsef A. Cervical Cytologic and Colposcopic Changes in Cases Using Intrauterine Devices for Along Time. AIMJ. 2022; Vol.3-Issue12 : 123-129.*

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ABSTRACT

Background: Intrauterine Contraceptive Device (IUD) is a safe, convenient and inexpensive method of contraception involving neither repetition nor interference with sexual activity.

Aim of the work: To to examine cytologic and colposcopic changes in individuals utilising IUCDs in the cervical region.for long periods of time and to create awareness among the IUCD users for regular follow up.

Patients and methods: The Obstetrics and Gynecology Department of Al-Hussein University Hospital conducted this cross-sectional study. 200 monogamous individuals with IUCD who have been free of STIs for three to five years made up the study group (Group 1). On the other hand, and Control Group (Group 2) included 200 patients without a previous anamnesis of any contraception method.

Results: Between the subjects in groups (1) and (2), the quantity of aberrant cervical cytology differed in a statistically significant way (p=0.02). When compared to group 1, group 2 was shown to have a higher incidence of inflammatory and infectious disorders, but group 1 had a higher incidence of abnormal ectopic changes (2). Regarding the degree of ectopy, there was a statistically significant difference between group (1) and group (2). (2). The findings of the colposcopy revealed a significant statistical distinction between members of group (1) and group (2).

Conclusion: It is crucial to make sure that cervical cancer screening and contraception function closely together in order to give women the best treatment possible.

Keywords: *Intrauterine Contraceptive Devices; Cervical Cytologic; Colposcopic.*

Disclosure: *The authors have no financial interest to declare in relation to the content of this article. The Article Processing Charge was paid for by the authors.*

Authorship: *All authors have a substantial contribution to the article.*

INTRODUCTION

Intrauterine Contraceptive Devices (IUCDs) are a sort of long-acting reversible contraception, the most effective reversible birth control method. IUCDs are reversible, long-acting, safe, cost and effective. IUCD is one of the most commonly used family planning method after voluntary female sterilization.[1]

Intrauterine devices are reversible, long-lasting, and the most commonly used birth control method worldwide. It is still unclear how IUDs work. It is believed that it has various effects on sperm, ovum, fertilization, implantation, and endometrium. The optimal time for IUD insertion is the menstrual period. Postpartum IUD insertion can be performed during the postpartum control visits 4-8 weeks after delivery. Studies could not prove the fact that IUDs increased the risk of pelvic infection and caused an ectopic pregnancy, of all other female genital organ cancers, cervical cancer is the most common cancer type for women worldwide.[2]

Cervical cancer, with an ever-increasing incidence rate in younger females worldwide, has been one of the major causes of morbidity in women below 40 years of age. Cervical cancer is seen at lower rates in developed countries where the public health is improved, while it is more prevalent in less developed countries. Although Israel is not a developed country; women have the lowest incidence rates of cervical cancer since sexual behaviors, circumcision, and hygiene habits have an important place in the etiological causes.[3]

Cervical cancer doesn't progress suddenly and remains as precancerous lesions over the course of

many years. This allows for an early diagnosis through some methods of cytologic and clinical diagnosis and creates a window of opportunity for a curative treatment. Cytology and colposcopy are the most advantageous techniques used in the diagnoses of cervical cancer and preinvasive lesions. However; cytology doesn't provide the last finding of the disease, it is a screening method that should be performed with others for further examination (Colposcopy, Histo-Pathology). It is acknowledged that colposcopy and cytology are mutually complementary methods. Cytology examines exfoliated cells, while colposcopy examines the changes occur in the vascular structure of the cervix.[4]

According to some research, endocervical curettage (ECC) should be performed routinely in all cases with abnormal cytologic findings. ECC is performed when colposcopic examination is unsatisfactory or fails to provide any finding that explains the abnormal cytology during a colposcopic examination. Patients with an abnormal pap smear result or patients with a suspicious-looking cervix even they had a (-) pap smear should be evaluated by colposcopy and colposcopy directed biopsy. The false-negative rate of the Pap smear test is about 20%-40%. These rates also cover the patients diagnosed with cervical cancer shortly after a normal cytology.[5]

The aim was to investigate cervical cytologic and colposcopic changes in patients using IUCDs for a long period of time and to create awareness among the IUCD users for regular follow up.

PATIENTS AND METHODS

The Obstetrics and Gynecology Department of Al-Hussein University Hospital conducted this cross-sectional study. 200 patients in the study group (Group 1) were monogamous, without a history of STDs, and had been using an IUCD for three to five years. On the other hand, and Control Group (Group 2) included 200 patients without a previous anamnesis of any contraception method.

Inclusion criteria: Ladies of age above 35 years and bellow 40 years, of party 3 to 5 time, subjects using intrauterine contraceptive device for 3 to 5 years, the subjects were chosen irrespective of their socio-demographic profile, and never on any other contraceptive method.

Exclusion criteria: Subjects not do early entercors befor 18 years, subject with missing IUCD, subjects with pregnancy with IUCD in situ, and patients with HPV.

All patients were subjected to:

Complete history taking: (1) A person's name, age, marital status, and residence. (2) A person's menstrual history, which includes the age at menarche, menstrual disturbances, dysmenorrhea, and associated symptoms. (2) Previous obstetric history, including parity and delivery method. (3) Current history: pharmaceutical use and chronic illnesses. (4) Previous HTN and DM history. (5) A history of diabetes or a related illness in the family. (6) A history of drug allergies. (7) Laparoscopic interference in the operation's surgical history.

Examination:

General examination: measurement of weight, height, and the evaluation of vital signs (BMI).

Abdominal and local clinical examination: to evaluate fundal level and gestational age, previous surgery scar, mass, soreness or rigidity, and any abdominal or pelvic pathology that can be clinically detected

Bimanual pelvic examination of both adenexa, uterus to look for any abnormalities in the female genitalia.

Routine trans-vaginal examination.

Examination for any visible lesions or secretions.

Vaginal Pap smear was taken.

Colposcopic examination

All cases had been undergoing a colposcopic examination performed by the same gynecologist with the same colposcopic device and a smear was obtained from all patients.Age, Parity, Gravida, The histories of the patients had been used to determine the number of births and the age at first coitus. A smear had been obtained prior to the examination. The cervix had been examined with the naked eye before applying Acetic Acid (AA) and the presence of displaced endocervical epithelium (Ectropion or Ectopy) had beennoted. Ectropion and/or ectopy had been classified as mild (Periorificial), moderate, and severe (reaching to Fornix zone) according to the area occupied in the cervix.

The presence or absence of atypical vascularization had been recorded using a green filter by wiping the cervix with serum physiologic. Following this procedure, cervical mucus had been removed with a 3% of AA solution and after waiting for about a minute, Squamo-columnar Junctions (SCJ) and Transformation Zone (TZ) had been observed. The response of the cervix to AA had been evaluated as mild and dense according to the severity of whitening. Mosaic and punctuation patterns had been described as course and fine.

Colposcopy will be considered satisfactory in cases where SCJ can be observed clearly and continuously and the entire TZ and any extent of a lesion, if present, will be visible. On the other hand, colposcopy will be considered unsatisfactory in cases where SCJ will not be observed clearly and TZ can not be seen fully and in cases with a lesion extending into the cervix canal where the upper limit can not be seen clearly. ECC will be performed with the Novak curette in patients with unsatisfactory colposcopy in order to determine the treatment protocols and to examine the endocervical canal, as well.

Punch biopsy will be performed on mild dense Aceto White (AW) areas, Schiller positive areas and areas with fine or coarse mosaics and punctuations. Before obtaining the cytology and histo-pathology results, IUCDs will be not removed from any of the patients, including those diagnosed with lesions. Biopsy specimens fixed in 10% formaldehyde will be sent to pathology. After a routine histo-pathological examination, 5-micron tissue sections stained with

Hematoxylin Eosin will be examined under a light microscope at 40x, 100x, and 400x magnifications.

Ethical Consideration: The Al Azhar University faculty of medicine's Institutional Review Board (IRB) had requested clearance of the study plan. All study participants received an explanation of the procedure before beginning the trial, and all patients provided counselling regarding the study's risks and benefits before providing their written consent. At every stage of the study, confidentiality and personal privacy have been protected.

Statistical analysis:

Microsoft Excel 2016 and the SPSS programme (Statistical Package for Social Sciences) version 26.0 will be used to tabulate and statistically analyse the obtained data, and MedCalC programme software version 19. When analysing numerical non-parametric data, descriptive statistics were carried out using the mean, SD (standard deviation), minimum, and maximum of the range., they were performed using the median and first and third interquartile ranges; and for categorical data, they were performed using the number and percentage. For quantitative variables, inferential analyses were performed using the independent t-test when there were two independent groups and parametric data, when there were two independent groups with non-parametric data, and the Mann Whitney U. For inferential analysis of qualitative data, the chi square test for independent groups was used. P values under 0.05 were used to determine significance; values beyond this threshold are non-significant. The p-value is a statistical indicator of the likelihood that the findings of a study may have been the result of chance.

RESULTS

			Group 1	Group 2 (Control group)	Test value	P-value
			n = 200	n = 200		
Age (years)	Mean± SD		37.5± 1.1	37.6± 1.1	^{Z}MWU=0.677	0.498*
	Median (IQR)		38.0 (36.0 - 38.0)	38.0 (37.0 - 38.5)		
	Range		36.0 - 39.0	36.0 - 39.0		
Gravida	G3	n	61	64	X^2= 1.696	0.638§
		%	30.5%	32.0%		
	G4	n	60	70		
		%	30.0%	35.0%		
	G5	n	79	66		
		%	39.5%	33.0%		
	G6	n	61	64		
		%	30.5%	32.0%		
Parity	P3	n	61	64	X^2= 2.01	0.367§
		%	30.5%	32.0%		
	P4	n	60	70		
		%	30.0%	35.0%		
	P5	n	79	66		
		%	39.5%	33.0%		
Age at first coitus	Mean± SD		18.9± 0.7	19.6± 1.3	^{Z}MWU=5.71	<0.001*
	Median (IQR)		19.0 (18.0 - 19.0)	20.0 (19.0 - 20.0)		
	Range		17.0 - 20.0	17.0 - 23.0		

p≤0.05 is considered statistically significant, p≤0.01 is considered high statistically significant, SD= standard deviation, IQR= Interquartile range,

-comparison between groups done by **Mann-Whitney U test, § Chi-Square Test

Table 1: Clinico-demographic characteristics among the studied groups

According to Table 1, there was no statistically significant difference in age between the two groups (p=0.498). In the two groups, gravida and parity were comparable and didn't differ significantly (p=0.638 & 0.367, respectively). The age at first coitus in group 1 was, however, noticeably younger than it was in the control group (p 0.001).

			Group 1	Group 2 (Control group)	Test value	P-value
			n = 200	n = 200		
Ectopy	Absent	n	74	56	X^2= 12.75	0.005§
		%	37.0%	28.0%		
	Mild	n	52	41		
		%	26.0%	20.5%		
	Moderate	n	53	58		
		%	26.5%	29.0%		
	Severe	n	21	45		
		%	10.5%	22.5%		
Smear	Normal	n	44	48	X^2= 17.94	0.022§

results		%	22.0%	24.0%		
	Infection	n	58	66		
		%	29.0%	33.0%		
	Chronic Cervicitis	n	65	59		
		%	32.5%	29.5%		
	Coilocytosis	n	4	10		
		%	2.0%	5.0%		
	Low Grade Squamous Intraepithelial lesion (LG SIL)	n	13	10		
		%	6.5%	5.0%		
	Atypical Squamous Cells of Undetermined Significance (ASCUS)	n	9	3		
		%	4.5%	1.5%		
	High Grade Squamous Intraepithelial lesion (HG SIL)	n	3	0		
		%	1.5%	0.0%		
	Squamous carcinoma	n	4	0		
		%	2.0%	0.0%		
	Unsatisfactory Smear	n	0	4		
		%	0.0%	2.0%		

p≤0.05 is considered statistically significant, p≤0.01 is considered high statistically significant, SD= standard deviation, IQR= Interquartile range, comparison between groups done by § Chi-Square Test

Table 2: Comparison between the studied groups regarding pathological findings

Table (2) indicates that there was a statistically significant difference between group (1) and group (2) patients in the prevalence of abnormal cervical cytology (p=0.02). When compared to group 1, group 2 was shown to have a higher incidence of inflammatory and infectious disorders, but group 1 had a higher incidence of abnormal ectopic changes (2). Regarding the degree of ectopy, there was a statistically significant difference between group (1) and group (2). (p=0.005).

			Group 1	Group 2 (Control group)	Test value	P-value
			n = 200	n = 200		
Colposcopy Findings	Polyp	n	32	83	X^2= 126.03	<0.001§
		%	16.0%	41.5%		
	Specific infection	n	17	0		
		%	8.5%	0.0%		
	Condyloma	n	50	0		
		%	25.0%	0.0%		
	Leukoplakia	n	17	36		
		%	8.5%	18.0%		
	Cervix Cancer	n	17	27		
		%	8.5%	13.5%		
	Erosion	n	0	18		
		%	0.0%	9.0%		
	Unsatisfactory Colposcopy	n	67	36		
		%	33.5%	18.0%		

p≤0.05 is considered statistically significant, p≤0.01 is considered high statistically significant, SD= standard deviation, IQR= Interquartile range, comparison between groups done by § Chi-Square Test

Table 3: Comparison between the studied groups regarding colposcopic findings

Table (3) shows there were high statistically significant difference colposcopy findings between the participants in group (1) and group (2) (p< 0.001).

			Group 1	Group 2 (Control group)	Test value	P-value
			n = 200	n = 200		
F mosaic	No	n	189	171	X^2= 9.00	0.003§
		%	94.5%	85.5%		
	Yes	n	11	29		
		%	5.5%	14.5%		
Smear	Normal	n	100	88	X^2= 36.91	<0.001§

results		%	50.0%	44.4%		
	Chronic Cervicitis	n	47	57		
		%	23.5%	28.8%		
	Coilocytosis	n	23	13		
		%	11.5%	6.6%		
	Low Grade Squamous Intraepithelial lesion (LG SIL)	n	27	10		
		%	13.5%	5.1%		
	Atypical Squamous Cells of Undetermined Significance (ASCUS)	n	0	16		
		%	0.0%	8.1%		
	High Grade Squamous Intraepithelial lesion (HG SIL)	n	0	7		
		%	0.0%	3.5%		
	Squamous carcinoma	n	3	7		
		%	1.5%	3.5%		

p≤0.05 is considered statistically significant, p≤0.01 is considered high statistically significant, SD= standard deviation, IQR= Interquartile range, comparison between groups done by § Chi-Square Test

Table 4: Comparison between the studied groups regarding F mosaic and biopsy findings

According to Table (4), Regarding F mosaic, there was a statistically significant difference between the participants in groups (1) and (2) (p=0.003). The biopsy results showed a highly statistically significant difference between group (1) and group (2). (p 0.001).

DISCUSSION

Regarding the clinico-demographic traits of the two study groups. Age differences between the two groups were not statistically significant (p=0.498). In the two groups, gravida and parity were comparable and didn't differ significantly (p=0.638 & 0.367, respectively). On the other hand, group 1's group 1's age at first coitus was considerably lower than the control group's age (p 0.001). The mean ages of the cases in Groups 1 and 2 in the study by Aba et al.6 were, however, 38.67 and 39.11 years old, respectively. In Group 1 and Group 2, the mean ages at first conception were 19.49 and 18.95 years, respectively. Age and age at first coitus were not significantly different between the two groups (t=0.36, p=0.72; t=0.91, p=0.36).

The comparison of Gravida revealed a significant difference (p=0.03), whereas the comparison of parity did not (p=0.15, p=0.14). In the study group (Group 1), there were 62 monogamous patients without a history of STDs who had been using an IUD for at least five years. The control group (Group 2), on the other hand, consisted of 126 patients whose IUDs were not discovered during the evaluation and patients without a history of IUD use. In the study by Ajah et al., 156 women were split into each of the 2 groups. The average participant age, which was 37.56 7.87 years, indicated that they ranged in age from 20 to 49 years. The socio-demographic characteristics of participants using IUDs and those not using contemporary contraception are compared, and the participants' mean duration of IUD use was 42.32 11.32 months. On these variables, there was no statistically significant difference between the 2 participant groups.

The current investigation's findings showed that the two groups under study differed in terms of the degree of ectopy and smear cytology. There was a statistically significant difference in the percentage of abnormal cervical cytology between the participants in groups (1) and (2) (p=0.02). When compared to group 1, Group 1 had a higher incidence of aberrant ectopic alterations, whereas group 2 was revealed to have a higher frequency of inflammatory and infectious illnesses (2). There was a statistically significant difference between group (1) and group (2) with regard to the level of ectopy (p=0.005). Regarding contrasts between the studied groups in terms of the F mosaic and biopsy results. The participants in groups (1) and (2) differed statistically significantly in terms of F mosaic (p=0.003). A highly statistical analysis lly significant difference between group (1) and group (2) in the biopsy results (p 0.001).

Our findings were corroborated by a research by Loopik et al.[8], which found that 91.4 percent of women did not acquire any cervical abnormalities during follow-up while 6.6 percent and 1.9 percent, respectively, did so. 95.6% of high-grade lesions were histologically confirmed, and among all included women, 5547 (0.79%), 6705 (0.96%), and 559 (0.08%) developed histologically confirmed CIN (cervical intraepithelial neoplasia) 2, CIN3, and cervical cancer, respectively. Additionally, According to Kaplan[9], women using Cu-IUDs experienced a decrease in the frequency of CIN II+ lesions while COC (Combination Oral Contraceptive) users experienced an increase (p=0.038). In contrast, the study by Aba et al.6 indicated that mild ectopy detection rates in Groups 1 and 2 were 25.8% and 19.18%, moderate ectopy detection rates were 25.8% and 28.6%, and severe ectopy detection rates were 11.38% and 23.8 percent, respectively. The rates of ectopy before colposcopy did not differ statistically significantly between the two groups. F. Patients who used an IUD had a significantly decreased mosaic rate (2 = 3.74, p0.05).

There was no correlation between copper IUDs and cervical dysplasia or cancer, according to Hardeman and Weiss' analysis[10] of the data. With the

levonorgestrel IUD, there was a marginally elevated risk for CIN 2, but not CIN 3. The 52 mg levonorgestrel IUD was the only one included in this study due to the timing of the research. The authors hypothesised that residual confounding may be to blame for this shaky connection. As a result, they conducted second research comparing IUD users to those who used hormonal contraceptives (while excluding those who were not taking contraception), however they were unable to find a connection between IUD use and CIN 2. This lends credence to the idea that sexual activity that results in HPV infection could be a complicating factor. Additionally, a very weak connection that is unlikely to have clinical significance is indicated by a relative risk of 1.18. It is unknown how levonorgestrel might affect the cervix's capacity to rid itself of HPV infection. Some believe that the anti-inflammatory effects of levonorgestrel may prevent HPV removal.[11]

In the Cu IUD cohort there were 77 cervical neoplasms (0.9%), whereas in the LNG-IUS cohort there were 37 (1.5%), according to Spotnitz et al.[5] The propensity score matching study identified 7,114 Cu IUD and 2,174 LNG-IUS users with a covariate balance of 16,827 factors. 0.7 percent of the Cu IUD cohort and 1.8 percent of the LNG-IUS cohort (2.4 [95 percent CI 1.5-4.0] cases/1,000 person-years and 5.2 [95 percent CI 3.7-7.1] cases/1,000 person-years, respectively) were found to have high-grade cervical neoplasia. In comparison to LNG-IUS users, the relative risk of high-grade cervical neoplasms among Cu IUD users was 0.38 (95% CI 0.16-0.78, P =.02). These results add to those from a previous thorough assessment of case-control studies, which found that IUD use lowers the risk of cervical cancer. We assume that those patients primarily used Cu IUDs or maybe inactive IUDs based on the dates and locations of the individual studies that make up the systematic review.

Ions of copper, which are released by copper IUDs, are thought to raise prostaglandin levels in uterine and tubal fluids. LNG-IUSs, on the other hand, inhibit cervical and uterine immunity by reducing prostaglandin synthesis. According to a retrospective investigation, users of LNG-IUS may clear HPV infections more slowly and be more prone to infection than users of Cu IUDs because of these variations in immunomodulation. [12]

According to Skorstengaard et al.[13], HIUD and CIUD users had a lower risk of CIN2 and CIN3+ than OC users over the course of the subsequent 5 years among women with normal cytology at the time of initiating contraceptive usage. HIUD users were more likely than CIUD or OC users to have a normal histology or a low grade CIN1 diagnosis. This might be explained by diagnostic monitoring of irregular bleeding after HIUD insertion. This was only observed in women who had used HIUDs for a brief period of time—between 1-2 years. Users of HIUD and CIUD were less likely to experience abnormalities than users of oral contraceptives (OC) in women who were only monitored by cytology. Researchers found that this abnormality progressed with a similar frequency in women who had it at the time they started using contraceptives, with the exception of a small protection against the evolution of less severe precancerous cervical lesions among HIUD users. The fact that women with CIN3+ and CIN2 who do not intend to become pregnant in Denmark are always given a conization to limit lesion progression may help to explain this commonality. Between the three groups of people who used contraception, there was an equal probability of persistence and regression.

None of the cases among IUD users in our study developed malignant transformation, contrary to what was previously described in India[14]. The results of earlier studies conducted in the USA, Israel, New Zealand, and other centres corroborate the lack of a statistically significant difference between participants using IUDs and those who did not use contemporary contraception in this study. [15] In contrast to reports from Malaysia, Wales, and India, this was true. [16]

According to the results of the two groups that were the subject of the current study's colposcopy, there were extremely statistically significant variations in the colposcopy outcomes between group (1) and group (2) participants (p 0.001). However, according to the patients' colposcopic examination results in the study by Aba et al: in Groups 1 and 2, polyp rates were found to be 16.7 percent and 40.9 percent, respectively, and leukoplakia was found to be 8.3 percent and 18.2 percent. There was no statistically discernible difference between the two groups.

CONCLUSION

Regarding the degree of ectopy, colposcopy, F mosaic, and biopsy, there was a statistically significant difference between the two groups. It is crucial to make sure that cervical cancer screening and contraception function closely together in order to give women the best treatment possible. the continuous use of the original device for a maximum of five years in light of the appearance of endometrial hyperplasia in two wearers after six years.

Conflict of interest : none

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