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Original Research Article

A comparative study to evaluate endometrial aspiration using Karman's cannula versus dilatation and curettage in cases of abnormal uterine bleeding

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ABSTRACT

Background: Abnormal uterine bleeding (AUB) is defined as any variation from the normal menstrual cycle such as changes in regularity, frequency, duration of flow or amount of flow. Objective of this study was to compare the adequacy and diagnostic accuracy of endometrial aspiration using Karman's cannula versus dilatation and curettage in women with abnormal uterine bleeding.

Methods: This prospective study was conducted on 250 women with AUB in age group of more than 40 years. In all patients, endometrial aspiration was done with manual vacuum aspiration (MVA) syringe attached to 4 mm Karman's cannula without anesthesia. The sample was collected in a bottle containing formalin and was labelled as sample A. After that, intracervical local anesthesia (1% Xylocaine) was given and cervix was dilated and scraping of endometrial lining with sharp curette was done. The sample was also collected in a bottle containing formalin and was labelled as sample B. Both the samples A and B were sent for histopathology. The histopathology report of aspiration was compared with that of dilatation and curettage sample.

Results: Endometrial aspiration biopsy had sensitivity of 92.3%, specificity of 100%, positive predictive value of 100% and negative predictive value of 99.56% for diagnosis of endometrial pathology while considering D and C gold standard. The sample adequacy of endometrial aspiration was 98.8% as compared to dilatation and curettage (98%).

Conclusions: Present study showed that endometrial aspiration biopsy is an alternate to traditional dilatation and curettage in diagnosing endometrial pathologies in women with abnormal uterine bleeding.

Keywords: Abnormal uterine bleeding, Accuracy, Drug and cosmetic, Endometrial aspiration

INTRODUCTION

Abnormal uterine bleeding (AUB) is defined as any variation from the normal menstrual cycle such as changes in regularity, frequency, duration of flow or amount of flow.¹ It occurs in 9-14% of women between menarche to menopause, significantly impacting quality of life and imposing financial burden.²⁻⁴ Endometrial biopsy is an important step in the assessment of abnormal uterine bleeding to rule out endometrial carcinoma so that medical or conservative surgery can be offered and

unnecessary radical surgery can be avoided. Hence, present study was planned to evaluate and compare the adequacy and diagnostic accuracy of endometrial aspiration with conventional dilatation and curettage in cases of abnormal uterine bleeding.

METHODS

This prospective, randomized study was conducted on 250 women of more than 40 years of age with abnormal uterine bleeding who presented in the outpatient department of

obstetrics and gynecology, Pt B D Sharma Post Graduate Institute of Medical sciences, Rohtak (Table 1).

Table 1: Baseline characteristics of patients.

Age range (years) Mean±SD	50.79±9.58
Range	40-84
SE status	LM - 166 (66.4%) UM - 84 (33.6%)
Parity	
P1	2 (0.8%)
P2	96 (38.4%)
>P3	152 (60.8%)
Literacy	Illiterate - 106 (42.4%) Literate - 144 (57.6%)
Occupation	Housewife - 221 (88.4%) Unemployed - 29 (11.6%)
Duration of illness (months) (Mean±SD)	9.35±21.06

Patients with suspected pelvic infection, pre-malignant and malignant lesions of cervix, cervical stenosis, uterine polyp, pregnancy and related causes of bleeding like abortion and molar pregnancy, coagulopathy, uncontrolled severe hypertension and uncontrolled diabetes, heart diseases, profusely bleeding patients requiring therapeutic curettage, women on oral contraceptives and with IUCD in situ were excluded from the study.

Written informed consent was taken from all patients included in the study. A detailed menstrual history was taken followed by general physical and systemic examination. Per speculum and bi-manual vaginal examination was done to rule out any local causes of bleeding. Laboratory tests including hemoglobin, coagulation profile, thyroid profile and ultrasound pelvis was done.

In all patients, endometrial aspiration was done with manual vacuum aspiration (MVA) syringe attached to 4 mm Karman's cannula without anesthesia. The sample was collected in a bottle containing formalin and was labelled as sample A. After that, intracervical local anesthesia (1% Xylocaine) was given and cervix was dilated and scrapping of endometrial lining with sharp curette was done. The sample was also collected in a bottle containing formalin and was labelled as sample B. Both the samples A and B were sent for histopathology. The histopathology report of aspiration was compared with that of dilatation and curettage sample.

Outcome

The primary outcome was determined by sensitivity and specificity for diagnosis of endometrial pathology using aspiration biopsy.

Secondary outcome was evaluated by acceptability and user satisfaction.

Compliance with ethical standards

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Statistical analysis

The collected data was analyzed with the help of Statistical Package for Social Sciences (SPSS) version 20.0. frequency distribution and cross-tabulation was used to create summary and compare results within and across various categories using appropriate statistical test.

RESULTS

Two fifty women with eligible criteria were recruited in the study. All the patients underwent endometrial sampling by both methods. The histopathology report of samples obtained by endometrial aspiration versus dilatation and curettage were compared (Table 2).

Table 2: Comparison of histopathological diagnosis following endometrial aspiration biopsy versus dilatation and curettage (D and C).

Findings	Endometrial sampling	D and C
Proliferative	120 (48%)	119 (47.6%)
Secretory	115 (46%)	111 (44.4%)
Senile cystic atrophy	0	2 (0.8%)
Endometrial hyperplasia without atypia	2 (0.8%)	3 (1.2%)
Endometrial hyperplasia with atypia	5 (2%)	5 (2%)
Carcinoma	5 (2%)	5 (2%)
Inadequate sample	3 (1.2%)	5 (2%)
Total	250	250

In this study we have considered dilatation and curettage as gold standard. Hence when compared to dilatation and curettage, the sensitivity of endometrial aspiration is 92.3%, specificity is 100%, positive predictive value is 100% and negative predictive value is 99.56% (Table 3).

Table 3: Categorization of histopathological findings following endometrial aspiration biopsy and dilatation and curettage (D and C).

Endometrial aspiration biopsy	Dilatation and Curettage	
	Abnormal	Normal
Abnormal	12 (a)	0 (b)
Normal	1 (C)	230 (d)

For diagnosis of endometrial hyperplasia, the sensitivity of endometrial aspiration is 87.5%, specificity is 100%,

positive predictive value is 100% and negative predictive value is 99.57% ($p < 0.001$, Table 4).

Table 4: Comparison of endometrial aspiration biopsy versus D and C in patients of endometrial hyperplasia.

Procedure	Positive/total	Percentage
Endometrial aspiration biopsy	7/8	87.5
Dilatation and curettage	8/8	100

While diagnosing carcinoma by using endometrial aspiration, sensitivity is 100%, specificity is 100%, positive predictive value is 100% and negative predictive value is 100% (Table 5).

Table 5: Comparison of endometrial aspiration biopsy versus D and C in patients of endometrial carcinoma.

Procedure	Positive/total	Percentage
Endometrial aspiration biopsy	5/5	100
Dilatation and curettage	5/5	100

In this study, tissue adequacy in samples collected by endometrial aspiration was 98.8% whereas in samples collected by dilatation and curettage it was 98% ($p < 0.001$, Table 6).

Table 6: Comparison of sample adequacy of endometrial aspiration biopsy versus dilatation and curettage.

Procedure	Adequate	Inadequate
Endometrial aspiration biopsy	247 (98.8%)	3 (1.2%)
Dilatation and Curettage	245 (98%)	5 (2%)

Hence it is an alternate to traditional dilatation and curettage in diagnosing endometrial pathologies in women with abnormal uterine bleeding.

In 1 patient, endometrial aspiration showed proliferative endometrium but endometrial hyperplasia without atypia in dilatation and curettage. In 4 patient, endometrial aspiration showed secretory endometrium but inadequate sample in dilatation and curettage. In 1 patient, inadequate sample was there in both methods. In 2 patients, endometrial aspiration showed inadequate sample but D and C showed senile cystic atrophy.

DISCUSSION

The main aim is to evaluate and compare the adequacy and diagnostic accuracy of endometrial aspiration with

conventional dilatation and curettage in cases of abnormal uterine bleeding.

In this study authors have considered dilatation and curettage as gold standard. Hence when compared to dilatation and curettage, the sensitivity of endometrial aspiration is 92.3%, specificity is 100%, positive predictive value is 100% and negative predictive value is 99.56%. The results were in concordance with the study conducted by Rachamalla et al, in which endometrial aspiration had sensitivity of 93.4%, specificity of 100%, positive predictive value of 100% and negative predictive value of 92.3%.⁵ In study done by Yasmin et al, sensitivity, specificity, PPV and NPV were 100%, 84%, 100% and 95% respectively.⁶

For diagnosis of endometrial hyperplasia, the sensitivity of endometrial aspiration is 87.5%, specificity is 100%, positive predictive value is 100% and negative predictive value is 99.57% ($p < 0.001$). While diagnosing carcinoma by using endometrial aspiration, sensitivity is 100%, specificity is 100%, positive predictive value is 100% and negative predictive value is 100%.

In study conducted by Machado et al, in 1535 patients, it was concluded that endometrial aspiration was 84.2% sensitive, 99.1% specific, 96.9% accurate with 94.1% positive predictive value and 93.7% negative predictive value for diagnosing endometrial hyperplasia and carcinoma.⁷

Three hundred sixty endometrial cancer patients had preoperative endometrial sampling to evaluate the ability of preoperative endometrial sampling to accurately diagnose high grade endometrial cancer were included in Gloria et al, study. Gloria et al, concluded that endometrial aspiration biopsy was 93.8% sensitive for diagnosing low grade endometrial cancer and it was 99.2% sensitive for diagnosing high grade endometrial cancer. They also concluded that the endometrial sampling by aspiration is sensitive and accurate for the diagnosis of high-grade endometrial tumors.⁸

In this study, tissue adequacy in samples collected by endometrial aspiration was 98.8% whereas in samples collected by dilatation and curettage it was 98% ($p < 0.001$). In one study conducted by Patil et al, it was found that tissue adequacy is similar i.e. 96% in both samples.⁹

Baral and Pudasini reported adequacy of 92% in endometrial aspiration while conducting a study on patients of abnormal uterine bleeding.¹⁰ In a study conducted by Jairajpuri et al, it was concluded that endometrial aspiration has adequacy of 97.4%.¹¹ Shams et al, also showed 98% adequacy of endometrial aspiration while taking endometrial biopsy.¹²

Singh P et al, conducted a study on one hundred fifteen patients and concluded that endometrial aspiration is a simple, safe, and effective method to sample

endometrium in cases of AUB avoiding risk of anesthesia and is less time-consuming. In this study, heavy menstrual bleeding was the most common presentation of AUB. Adequate samples were obtained in 86% of cases while 13.9% of cases' sample was inadequate for opinion, many of which were later underwent hysteroscopy and/or dilatation and curettage (D and C) in operation theater. It was found that atrophic endometrium was the most common cause for inadequate sample. Out of them, uterine malignancy was diagnosed in three cases.¹³

CONCLUSION

Present study showed that endometrial aspiration biopsy is an outpatient procedure that can be performed without anaesthesia, analgesia, premedication and cervical dilatation. It preserves stromal architecture better and takes shorter time compared to dilatation and curettage. Hence it is an alternate to traditional dilatation and curettage in diagnosing endometrial pathologies in women with abnormal uterine bleeding. However, larger study with long term follow up is required to reach better conclusion.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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