

Original Article

Evaluating the Adequacy of Tissue Using Manual Vacuum Aspiration (MVA) Versus Metal Curettage Method in Endometrial Sampling in Abnormal Uterine Bleeding

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Abstract

Objective: To compare the adequacy of endometrial tissue obtained through Manual Vacuum Aspiration (MVA) versus Metal Curettage Method in females with abnormal uterine bleeding.

Methodology: This quasi-experimental study conducted at Obstetrics & Gynecology Department, Sir Ganga Ram Hospital, Lahore from April to October 2024. All 160 patients, presenting with AUB were included and were divided into two groups. Group A was undergoing endometrial sampling using MVA, while Group B was using sharp metal curettage. Samples from both groups were sent for histopathology, and adequacy was recorded. Females with suspected pelvic, infection or vaginal discharge, pre-malignant and malignant lesions of cervix, stenosis, uterine polyp, molar pregnancy, miscarriage, coagulopathy or history of coagulation disorder, heart diseases using anticoagulant or IUCD in situ were excluded. Post-stratification, both groups were compared for adequacy of sample by applying chi-square test in each stratum. P-value≤0.05 was considered as significant. All the data were analyzed in SPSS version 25.

Results: Total 160 patients, the mean age was 56.49 years, and the mean BMI was 28.39 kg/m². There were 68 cases of adequacy (46.9%) in Group A and 77 cases (53.1%) in Group B. There was a significant relationship of adequacy between study groups. (P<0.05).

Conclusion: The conclusion of the study that adequacy of endometrial sampling was significantly higher in the metal curettage group (Group B) compared to the MVA group (Group A). These findings suggest that metal curettage may be more effective in obtaining adequate samples for histopathological analysis.

Keywords: Adequacy, Endometrial sampling, MVA, Metal Curettage.

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Introduction

One method for obtaining endometrial tissue from women who have abnormal uterine bleeding (AUB) is endometrial sampling. When the bleeding pattern is erratic or has an unusual duration, it is referred to as irregular bleeding.¹ Worldwide, it is believed that between 3% and 30% of women in their reproductive years have AUB, with a higher incidence around menarche and perimenopause. The prevalence increases to 35% or more when irregular and intermenstrual bleeding are taken into account, however many studies only look at heavy menstrual bleeding. It is challenging to pinpoint the precise prevalence because

many women choose not to seek treatment for their symptoms, and some aspects of diagnosis are subjective while others are objective.^{2, 3, 4} This treatment is performed on women who have thicker endometrium on imaging in order to search for important disorders such as endometrial hyperplasia and cancer.⁵ For women over 45 or younger women with risk factors such as obesity, unresolved medical treatment, or ongoing bleeding, researchers advise endometrial biopsy. Curetting is the most popular method for endometrial sample, however it has a number of drawbacks.⁶ Less than half of the uterine cavity is evaluated during

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curettage in 60% of dilatation and curettage procedures due to the possibility of perforation.⁷

The elimination of retained products of conception is the primary use for manual vacuum aspiration (MVA). It is composed of a cannula and an aspirator. It is easy to use, portable, safe, and reusable following disinfection. During suction, a cannula with a diameter ranging from tiny to big can generate negative pressure (610-660 mmHg).⁸ MVA is utilized for endometrial sampling in addition to pregnancy termination. MVA can be completed quickly in an outpatient environment without anesthetic.⁹ When it comes to uterine evacuation, MVA and D&C are equally successful. The likelihood of a returning product of conception following uterine evacuation is very low, and MVA had a significantly lower rate of problems, procedure length, blood loss, and bleeding than D&C.¹⁰

The purpose of this study was to evaluate the suitability of endometrial aspiration acquired by curettage against MVA in instances of AUB. Evidence from the literature indicated that tissue samples taken by D&C and MVA were equally adequate. Compared to D&C, MVA is comparatively less invasive and can be performed on an OPD basis. However, D&C is still used since tissue sampling is considered adequate. In order to determine whether MVA is sufficient for collecting epithelial tissues and replacing D&C, this study has been planned. In the future, we will use the study's findings in a local context, which will help us advance our understanding and practice.

Methodology

After taking approval from the hospital ethical committee (ERC letter number with date), this quasi-experimental study was carried out at the Department of Gynaecology and Obstetrics, Unit 3, Sir Gangaram Hospital, Lahore from April to October 2024. The WHO calculator is used to determine the sample size of 160 patients (80 in each group) with a 5% significance level, 80% study power, and a percentage of adequate sampling, which is 98% with metal curettage and 87.88% with MVA¹¹ and 98% with metal curettage.¹² All the females who fall in following criteria were enrolled by using Non probability consecutive sampling technique.

Inclusion Criteria: Married females aged 40-70 years, presenting with AUB. AUB was defined as vaginal bleeding occurs from the uterus that is longer than usual or that occurs other than menstrual cycle i.e. frequency

of >38 days or lasts > 7 days, with > 80 milliliters of blood loss of at least 3 cycles.

Exclusion Criteria: Females with suspected pelvic, infection or vaginal discharge, pre-malignant and malignant lesions of cervix, stenosis, uterine polyp, molar pregnancy, miscarriage, coagulopathy or history of coagulation disorder, heart diseases using anticoagulant or IUCD in situ were excluded.

Written informed consent was taken. Demographics including name, age, BMI, duration of symptoms, parity, history of smoking (>5 pack years), diabetes (BSR>200 mg/dl), hypertension (BP≥140/90 mmHg) and menopausal phase (premenopausal, postmenopausal) were obtained. Females were explained about both procedure and divided into two groups depend on choice of procedure they opted to be performed. Females in group A was placed in lithotomy position in procedure room. Para cervical block (20-ml of 0.5% xylocain) 4ml was injected at 12 O' clock position and 8ml of xylocain administered intra-cervical at 4 and 8 O clock position. After aseptic measures, bladder was emptied and pelvic examination was done. In group A, each MVA cannula ranged from No. 3 to No 12 was titrated until it fitted with the end cervical canal and passed into endometrial cavity. Number of the largest cannula and the depth of intrauterine cavity was measured. Negative pressure of MVA aspirator was generated and the aspirator was connected to the cannula. MVA was moved gently around the entire endometrial cavity. The sample was labeled as sample A. In group B, sharp metal curettage was used for endometrial sampling after saddle anesthesia. The sample was labeled as sample B.

Samples were sent for histopathology and adequacy of sample was noted. Adequacy of tissue was labeled if the tissue sample, required for histopathological examination, is appropriate in quantity and stored appropriately and pathologist is able to identify the endometrial epithelium, gland and stroma and make definite diagnosis. All the data was recorded in proforma.

All the collected data was entered and analyzed into SPSS version 20.0 for analysis. Quantitative variable like age, BMI, duration of symptoms, were presented in the form of mean and Standard deviation. Qualitative variables like smoking, diabetes, hypertension, menopausal phase and adequacy were presented in the form of frequency and percentage. Both groups were compared for adequacy of sample by applying chi-square test. P-value≤0.05 was considered as significant. Data was stratified for age, BMI, duration of symptoms,

parity, smoking, diabetes, hypertension, menopausal phase. Post-stratification, both groups were compared for adequacy of sample by applying chi-square test in each stratum. $P\text{-value} \leq 0.05$ was considered as significant.

Results

The study included 160 women, with 80 participants in each group. The mean age was comparable between the MVA and metal curettage groups (56.3 ± 8.29 vs. 56.6 ± 9.37 years). Similarly, the mean BMI (28.8 ± 4.31 vs. 27.9 ± 4.14 kg/m²) and mean duration of symptoms (7.70 ± 2.75 vs. 7.50 ± 2.74 months) were similar between the groups. Most participants were postmenopausal (126, 78.8%), while diabetes (48.8%) and hypertension (54.4%) were common comorbidities. The distribution of parity, smoking status, menopausal status, and other baseline characteristics did not differ significantly between the two groups, indicating good baseline comparability (Table I).

Table I: Basic demographics of females. (n = 160)

Age	Group A (MVA)	Group B (Metal curettage)
Age, years	56.3 ± 8.29	56.6 ± 9.37
BMI, kg/m ²	28.8 ± 4.31	27.9 ± 4.14
Duration of symptoms, months	7.70 ± 2.75	7.50 ± 2.74
Parity		
Primigravida	15(44.1%)	19(55.9%)
Primiparous	14(53.8%)	12(46.2%)
Parity 2	10(35.7%)	18(64.3%)
Parity 3	21(56.8%)	16(43.2%)
Parity 4	20(57.1%)	15(42.9%)
History of		
Smoking	4(57.1%)	3(42.9%)
Diabetes Mellitus	39(50%)	39(50%)
Hypertension	45(51.7%)	42(48.3%)
Menopausal status		
Pre-menopause	15(44.1%)	19(55.9%)
Post-menopause	65(51.6%)	61(48.4%)

Overall, adequate endometrial tissue was obtained in 145 (90.6%) of the 160 women. Adequate sampling was achieved in 68 (85.0%) women in the MVA group and 77 (96.3%) women in the metal curettage group, with a significantly higher adequacy rate in the metal curettage group ($P=0.015$). On stratified analysis, metal curettage demonstrated significantly better tissue adequacy among women aged 55–70 years ($P<0.001$), obese women ($P=0.047$), those with symptom duration of 4–8 months ($P=0.005$), non-smokers ($P=0.020$), diabetic ($P=0.040$), hypertensive ($P=0.030$), and postmenopausal women ($P=0.019$). No statistically significant differences were observed among women

aged 40–55 years, non-obese women, those with symptom duration of 9–12 months, parity subgroups, smokers, non-diabetic, non-hypertensive, or premenopausal women (Table II).

Adequacy was observed in 145 females (90.6%). Figure 1

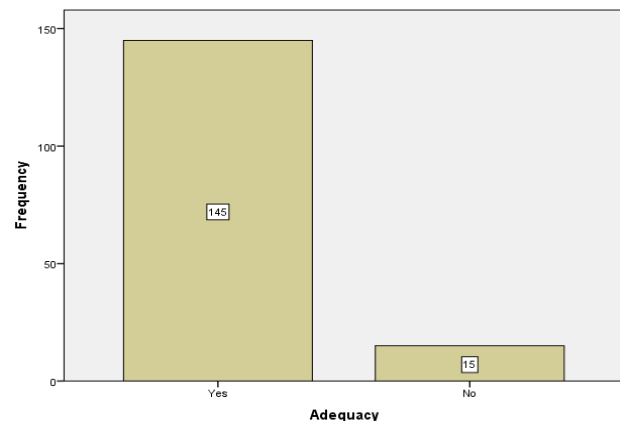


Figure 1. Adequacy of whole sample. (n = 160)

Table II: Comparison of adequacy in both trial groups as well as in association with effect modifiers.

Adequacy	Group A (MVA)	Group B (Metal curettage)	P-value
Adequacy	68 (46.9%)	77 (53.1%)	0.015
Age: 40 to 55	30 (49.2%)	31 (50.8%)	0.09
Age: 55 to 70	38 (45.2%)	46 (54.8%)	0.000
Non-obese	14 (43.8%)	18 (56.3%)	0.12
Obese	54 (47.8%)	59 (52.2%)	0.047
4 to 8 months of symptoms	35 (44.9%)	43 (55.1%)	0.005
9 to 12 months of symptoms	28 (50.9%)	27 (49.1%)	0.75
Parity <2	34 (42.0%)	47 (58.0%)	0.13
Parity >3	34 (53.1%)	30 (46.9%)	0.06
Smoker	3 (50%)	3 (50%)	0.30
Non-smoker	65 (46.8%)	74 (53.2%)	0.02
Diabetics	33 (46.5%)	38 (53.5%)	0.04
Non-diabetics	35 (47.3%)	39 (52.7%)	0.13
Hypertensive	38 (48.1%)	41 (51.9%)	0.03
Non-hypertensive	30 (45.5%)	36 (54.5%)	0.19
Pre-menopausal	15 (44.1%)	19 (55.9%)	NA
Post-menopausal	53 (47.7%)	58 (52.3%)	0.019

Discussion

AUB is a symptom rather than a condition. Due of AUB, the majority of women visit gynecological clinics. Menorrhagia, polymenorrhea, polymenorrhagia, metrorrhagia, and menometrorrhagia are some of the several forms it can take. As previously mentioned,

FIGO adopted a new classification system in 2010 to identify the causes of AUB in the reproductive years.^{2, 13} In the spectrum, heavy menstrual bleeding is responsible for 12% of all referrals. A common technique for obtaining sufficient endometrial tissue for the microscopic diagnosis is dilatation and curettage. Alternative to curettage is MVA which also reported to be highly effective in gynecological procedures.¹⁴

In this study of 160 females, with an average age of 56.49 years and a mean BMI of 28.39 kg/m², researchers compared the effectiveness of two methods for endometrial sampling: MVA and metal curettage. The results showed that Group B consistently provided more adequate samples across a range of factors, including age, BMI, the duration of symptoms, parity, smoking, diabetes, hypertension, and menopause status. Significant differences were particularly noted in obese females, those with diabetes or hypertension, and both pre- and post-menopausal women, with metal curettage proving to be more effective in obtaining adequate samples ($P < 0.05$).

The elimination of retained products of conception is the main application for MVA. It is composed of a cannula and an aspirator. It is easy to use, portable, safe, and reusable following disinfection. MVA is utilized for endometrial sampling in addition to pregnancy termination. In an out clinical situation, vacuum aspiration can be completed quickly and without anesthetic.⁹ As a result, pathologists determined that the endometrial tissue supplied to them was sufficient in 58 (87.88%) of the MVA group and 60 (90.91%) of the metal curette group.¹¹ Another study found that tissue adequacy was 98% ($p < 0.001$) in samples obtained by dilatation and curettage, compared to 98.8% in samples obtained via endometrial aspiration.¹²

The adequacy of the endometrial sample and the post-procedural pain between the MVA and metal curettage approach were compared in a randomized controlled research conducted in 2015.¹¹ Similarly, a 2011 study found that 88.9% of the D&C group's endometrial tissue from the MVA was sufficient for pathological diagnosis, while 91.1% of the MVA group's endometrial tissue was.¹⁵ In 2016, a study was conducted to assess the relationship between endometrial pathology and the sample obtained from sharp metal curettage and MVA.¹⁴

Similar to our study, they included females with AUB who were over 35. There was a 92.7% pathological correspondence and a 0.86 Kappa agreement ($K = 0.86$, p -value < 0.05) between the tissue taken from MVA and

the most severe pathology. They came to the conclusion that MVA might be used as an alternative diagnostic technique for women with AUB and diagnose all cases, including those with endometrial hyperplasia and cancer.¹⁶

Similar results with less difficulties have been reported by Tomar et al. Additionally, a recent study found that MVA does not require additional analgesia and is linked to relatively less problems.¹⁷ The findings of this investigation aligned with earlier research that demonstrated MVA to be a secure and efficient technique for endometrial collection. Additionally, in environments with limited resources, MVA has been demonstrated to be a secure and reliable technique for endometrial collection.¹⁸⁻²⁰

Conclusion

The conclusion of the study that distribution of demographic and clinical factors, such as age, BMI, parity, and comorbidities, was similar between the two groups, the adequacy of endometrial sampling was significantly higher in the metal curettage group (Group B) compared to the MVA group (Group A). These findings suggest that metal curettage is more effective in obtaining adequate samples for histopathological analysis.

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