Original Article

Diagnostic Values of Pipelle and Standard Curettage Compared to Hysterectomy Pathology in Postmenopausal Bleeding: A Comparative Study

Fariba Behnamfar, Elham Arshad

Department of Obstetrics and Gynecology, Faculty of Medicine, Isfahan University of Medical Sciences, Isfahan, Iran

Abstract

Background: Postmenopausal bleeding might occur due to many benign and malignant underlying diseases. Differentiating between these diseases poses a great importance. This study was designed to compare the diagnostic value of pipelle endometrial sampling and curettage in patients with postmenopausal bleeding. Further, the results were compared with hysterectomy if performed. **Materials and Methods:** Eighty-seven patients with postmenopausal bleeding were included. Pipelle sampling endometrial biopsy was performed for patients in office, and then, patients were transferred to the operation room for dilatation and curettage. Pathology results of pipelle sampling were compared with curettage method. If hysterectomy was performed due to any reason, it was compared as well. **Results:** The pipelle sampling biopsy diagnosed 94.1% of malignant tumors, and curettage sampling biopsy diagnosed 100% of malignant tumors. The sensitivity and specificity of pipelle compared to curettage were 94.12% and 100%, respectively, for the diagnosis of malignant tumors. Based on the Kappa test, the agreement between pipelle and curettage sampling biopsy was statistically significant ($P < 0.001$). **Conclusion:** The endometrial sampling with pipelle is safe and cost-effective in patients referred with postmenopausal bleeding. This might avoid the need for general anesthesia for the detection of endometrial hyperplasia and endometrial malignancy.

Keywords: *Dilatation and curettage, menopause, metrorrhagia, postmenopause, hysterectomy*

Introduction

Postmenopausal bleeding is an important chief complain that makes about 5% of patients' referral to gynecologists' office.[1-3] Patients with postmenopausal bleeding should be evaluated by endometrial sampling to rule out malignancy because of the incidence of endometrial cancer as 10% in postmenopausal women.[4,5] Assessment of abnormal uterine bleeding (AUB) in patients older than 40 years or those in the menopausal period is very important. Regarding the benign lesions are usually treated with medical or conservative treatment , unnecessary radical surgery can be avoided.[6]

There are many methods for endometrial assessment including ultrasonography, endometrial curettage, and office-based methods, such as endometrial samples using a pipelle.[1,7] Diagnostic dilatation and curettage (D&C) is a gold standard modality to obtain an endometrial biopsy, but it necessitates anesthesia and hospitalization and might have some complications such as infection or uterine perforation.[8,9] However, in most cases, <60% of the uterus cavity is curetted. Therefore, there has been a tendency toward less aggressive techniques in the recent years.

The pipelle device is a cost–benefit procedure for endometrial biopsy compared to curettage and can be done in an office setting.[10-12] According to the literature, pipelle technique has been suggested as a sensitive and specific diagnosis measure for the evaluation of endometrial cancer.[13-15]

Pipelle technique is more accepted by patients as it does not need any hospitalization or anesthesia. In addition, patients are not admitted in the hospital. Therefore, it has been more popular in the recent years.

Despite the fact, there are still much concerns in terms of sampling adequacy and diagnostic value that may lead to miss

Address for correspondence:
Dr. Elham Arshad, Department of Obstetrics and Gynecology, Faculty of Medicine, Al-Zahra Hospital, Isfahan University of Medical Sciences, Isfahan, Iran.
E-mail: arshad.elham@yahoo.com

Received: 02 February 2020
Revised: 30 April 2020
Accepted: 05 July 2020
Published: 30 October 2020

Access this article online

Website: www.advbiores.net

DOI: 10.4103/abr.abr_28_20

Quick Response Code:

How to cite this article: Behnamfar F, Arshad E. Diagnostic values of pipelle and standard curettage compared to hysterectomy pathology in postmenopausal bleeding: A comparative study. Adv Biomed Res 2020;9:58.

some malignant lesions in the uterus cavity. Many studies have compared the efficacy of pipelle and D&C, but very few evidence is available regarding the efficacy of these two techniques and hysterectomy pathology reports. Therefore, the aim of this study was to compare the diagnostic values of pipelle biopsy and D&C with the standard permanent pathology after surgical hysterectomy.

Materials and Methods

A prospective study was performed on 87 patients with postmenopausal bleeding referred to Al-Zahra and Beheshti University Hospitals from April 2018 to February 2019, Isfahan, Iran. The exclusion criteria were patients with pregnancy, cervical and focal endometrial lesions, coagulopathy, thyroid and liver diseases, or endometrial thickness of 4 mm or less in transvaginal ultrasound.

All patients were menopausal with at least 1 year from their last menstrual period who referred with vaginal bleeding. Transvaginal ultrasonography, complete blood cell count analysis, pregnancy test, coagulated, and liver and thyroid function tests were performed for every patient.

To collect data, specific checklists were filled including demographic factors such as age, weight, body mass index, parity, medical history, smoking and alcohol usage, familial or self-history of malignancy, and history of Polycystic Ovarian syndrome (PCOs) or infertility.

All patients underwent a pipelle endometrial biopsy in the office. Then, all underwent D&C in up to 4 weeks. All pipelle sampling biopsies were performed at office by a gynecologist. The results of pipelle biopsy and D&C were compared together and finally compared with the hysterectomy pathology reports if performed due to any reason.

Data analysis

Data analysis was performed by SPSS version 18 (SPSS Inc. Chicago, IL, USA). Sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV) of the tests were calculated. Chi-square and Kappa tests were used were appropriate. $P < 0.05$ was considered statistically significant.

Results

Eighty-seven patients entered the study. Mean ± standard deviation (SD) age of the patients was 60.22 ± 9.86 years. Demographic characteristics of the patients are summarized in Table 1. Mean ± SD of menopause and menarche ages was 50.13 ± 3.48 and 12.01 ± 1.06 years, respectively.

Mean ± SD number of parities in the participants was 4.68 ± 2.41, and the mean endometrial thickness was 10.32 ± 4.58 mm.

The pipelle, D&C, and hysterectomy biopsy pathology reports are summarized in Table 2. After biopsy, 29.1% of the patients underwent hysterectomy for

Table 1: Demographic variables of the participants

Variables	Value
Age (years), mean±SD	60.22±9.86
BMI (kg/m^2)	27.63±3.62
Menarche age (years)	12.01±1.06
Menopause age (years)	50.13±3.48
Parity	4.68±2.41
Waist–hip ratio	0.85±0.04
Endometrial thickness (mm)	10.32±4.58
Underlying disease (%)	
None	26 (29.88)
Diabetes mellitus	28 (32.2)
Hypertension	48 (55.2)
Others	12 (13.8)
Smoking	2 (2.3)
Alcohol usage	0
History of PCO	4 (4.6)
History of infertility	2 (2.3)
History of HRT	1 (1.1)
Self-history of malignancy	3 (3.4)
Family history of malignancy	0

SD: Standard deviation, BMI: Body mass index, PCO: Polycystic ovary syndrome

Table 2: Pathological reports of different modalities

Variables	Number %
Hysterectomy performed	25 (29.1)
Hysterectomy pathology	
Normal	5 (20)
Fibroid	3 (12)
Endometrial adenocarcinoma Stage IA	11 (44)
Endometrial adenocarcinoma Stage IB	4 (16)
Leiomyosarcoma	1 (4)
Serous adenocarcinoma	1 (4)
Pipelle	
Atrophy	23 (26.4)
Proliferative endometrium	19 (21.8)
Secretary endometrium	12 (13.8)
Polyp	1 (1.1)
Atypical hyperplasia	3 (3.4)
Carcinoma	13 (14.9)
Endometritis	1 (1.1)
Unsatisfactory	3 (3.4)
Hyperplasia without atypical	12 (13.8)
Curettage	
Normal	1 (1.1)
Atrophy	23 (26.4)
Proliferative endometrium	19 (21.8)
Secretary endometrium	13 (14.9)
Polyp	1 (1.1)
Atypical hyperplasia	3 (3.4)
carcinoma	13 (14.9)
Endometritis	1 (1.1)
Sarcoma	1 (1.1)
Hyperplasia without atypical	12 (13.8)

any reason and malignant tumors were detected in 17 cases (19.5%) [Table 3].

Based on the Kappa test, there was a significant agreement between pipelle and curettage sampling biopsies ($P < 0.001$, $\kappa = 0.94$). The pipelle and curettage sampling biopsy diagnosed 94.1% and 100%, respectively, of malignant tumors based on hysterectomy pathology.

The sensitivity and specificity of pipelle compared to curettage were 94.12% and 100%, respectively, for the diagnosis of malignant tumors. In addition, the PPV and NPV were 100% and 98.59%, respectively. Besides, the accuracy was 98.85%.

Discussion

Endometrial biopsy yields very useful information in AUB. Several malignant and nonmalignant lesions can be detected in differential diagnosis. Therefore, for benign lesions, noninvasive managements can be offered. Different modalities have been proposed for endometrial biopsy; each has its own pros and cons.[9,16,17]

D&C is an invasive procedure performed under general anesthesia. On the other hand, pipelle is a sensitive and specific way of diagnosis of endometrial cancer.[18] This is cost–benefit and does not require hospitalization and general anesthesia.[8,9]

Endometrial cancer is one of the most common cancers in female.[1] Some studies have compared the pipelle method and D&C; nonetheless, few evidence is available comparing these modalities with permanent histology after hysterectomy. Therefore, we tried to compare the results of pipelle, D&C, and hysterectomy pathology reports.

According to hysterectomy pathology, 11 specimens were found to be endometrial adenocarcinoma Stage IA, 4 endometrial adenocarcinoma Stage IB, 1 leiomyosarcoma, and 1 serous adenocarcinoma.

In our study, the sensitivity and specificity of pipelle compared to curettage were 94.12% and 100%, respectively, for diagnosis of malignant tumors. In addition, the PPV and NPV were 100% and 98.59%, respectively.

Table 3: Curettage (pipelle) sampling biopsy based on malignant and nonmalignant tumors in the hysterectomy pathology

Curettage and pipelle sampling	Malignancy based on the pathology of hysterectomy		*P*
	Yes (*n*=17)	No (*n*=8)	
Atrophy	0	6	0.001>
Polyp	0	2	
Atypical hyperplasia	3	0	
Carcinoma	13	0	
Sarcoma	1*	0	

*This patient was reported in the pipelle sampling biopsy unsatisfactory

In the study of Abdelazim *et al*., the pipelle sampling had 100% sensitivity, 100% specificity, and 100% predictive value for diagnosing endometrial pathologies (hyperplasia, endometrial carcinoma, and proliferative and secretory endometrium). Moreover, Fakhar *et al*. showed that pipelle had 100% sensitivity, specificity, PPV, and NPV for diagnosing endometrial carcinoma, hyperplasia, and secretory endometrium.[17]

In the study of Dijkhuizen *et al*., the pipelle sampling had 88.9% sensitivity, 99.2% NPV, and 99.3% accuracy for diagnosing endometritis.[13] In the study of Moradan in 2013–2014, the mean age was 46.19 years and the mean parity was 2.9. The pipelle accuracy compared to curettage was 97%.[1]

Furthermore, Tanriverdi *et al*.'s investigation showed accuracy rates of 88.1% and 77.1% for curettage and pipelle, which are lower than our study.[18] In the study of Antoni *et al*. in 1997 in Spain, 71% sensitivity for the diagnosis of endometrial hyperplasia and 60% sensitivity for the diagnosis of cancer were reported.[19] Sany *et al*. in the United Kingdom in 2012 reported 86% sensitivity for curettage and pipelle in cancer diagnosis.[20] Sarwar and Ul Haque in 2005 showed that pipelle biopsy had 100% sensitivity, 98% specificity, and 100% NPV for diagnosis of endometrial hyperplasia and atypia in the postmenopausal women.[21] These results are in line with our findings. Moreover, Demirkiran *et al*. in 2012 reported a 67% sensitivity rate for pipelle sampling in the diagnosis of endometrial hyperplasia,[22] which was lower than our study.

Very few studies have compared the outcomes of pipelle and D&C with hysterectomy pathology. Therefore, our study could yield useful information regarding the efficacy of pipelle biopsy in the diagnosis of uterus lesions. However, no major complications occurred in our study. We had some limitations. Our sample size was quite small, and the number of patients who underwent hysterectomy was few. Therefore, it is recommended to assess a larger sample, especially those who underwent hysterectomy. However, we could do hysteroscopy for all patients to assess the uterine cavity more precisely, which could be done in further investigations.

Conclusion

Endometrial sampling with pipelle is safe and cost-effective in patients with postmenopausal bleeding, which avoids general anesthesia and has high sensitivity and specificity for the detection of endometrial hyperplasia and endometrial malignancy.

Acknowledgment

We would like to thank Dr. Mohammad Moradi for English edit.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Moradan S, Mir Mohammad Khani M. Comparison the Diagnostic Value of Dilatation and Curettage Versus Endometrial Biopsy by Pipelle--a Clinical Trial. Asian Pacific journal of cancer prevention: APJCP. 2015;16:4971-5.
2. Bani-Irshaid I, Al-Sumadi A. Histological findings in women with postmenopausal bleeding: Jordanian figures. East Mediterr Health J 2011;17:582-6.
3. Carugno J. Clinical management of vaginal bleeding in postmenopausal women. Climacteric 2020;1:1-7.
4. Mirkin S, Archer DF, Taylor HS, Pickar JH, Komm BS. Differential effects of menopausal therapies on the endometrium. Menopause 2014;21:899-908.
5. Vilos GA, AlJasser R, Vilos AG, Oraif A, Abduljabar H, Abu-Rafea B. Histopathology and clinical outcomes of 151 women with postmenopausal bleeding treated with resectoscopic surgery. J Minim Invasive Gynecol 2020;27:763-73.
6. Telner DE, Jakubovicz D. Approach to diagnosis and management of abnormal uterine bleeding. Can Fam Physician 2007;53:58-64.
7. Fritz MA, Speroff L. Clinical Gynecologic Endocrinology and Infertility. Philadelphia: Lippincott Williams & Wilkins; 2012.
8. Grimes DA. Diagnostic dilation and curettage: A reappraisal. Am J Obstet Gynecol 1982;142:1-6.
9. Abdelazim IA, Aboelezz A, Abdulkareem AF. Pipelle endometrial sampling versus conventional dilatation & curettage in patients with abnormal uterine bleeding. J Turk Ger Gynecol Assoc 2013;14:1-5.
10. Stovall TG, Solomon SK, Ling FW. Endometrial sampling prior to hysterectomy. Obstet Gynecol 1989;73:405-9.
11. Lipscomb GH, Lopatine SM, Stovall TG, Ling FW. A randomized comparison of the Pipelle, Accurette, and Explora endometrial sampling devices. Am J Obstet Gynecol 1994;170:591-4.
12. Silver MM, Miles P, Rosa C. Comparison of Novak and Pipelle endometrial biopsy instruments. Obstet Gynecol 1991;78:828-30.
13. Dijkhuizen FP, Mol BW, Brölmann HA, Heintz AP. The accuracy of endometrial sampling in the diagnosis of patients with endometrial carcinoma and hyperplasia: A meta-analysis. Cancer 2000;89:1765-72.
14. Guido RS, Kanbour-Shakir A, Rulin MC, Christopherson WA. Pipelle endometrial sampling. Sensitivity in the detection of endometrial cancer. J Reprod Med 1995;40:553-5.
15. Clark TJ, Mann CH, Shah N, Khan KS, Song F, Gupta JK. Accuracy of outpatient endometrial biopsy in the diagnosis of endometrial hyperplasia. Acta Obstet Gynecol Scand 2001;80:784-93.
16. Abdelazim IA, Abdelrazak KM, Elbiaa AA, Al-Kadi M, Yehia AH. Accuracy of endometrial sampling compared to conventional dilatation and curettage in women with abnormal uterine bleeding. Arch Gynecol Obstet 2015;291:1121-6.
17. Fakhar S, Saeed G, Khan AH, Alam AY. Validity of pipelle endometrial sampling in patients with abnormal uterine bleeding. Ann Saudi Med 2008;28:188-91.
18. Tanriverdi HA, Barut A, Gün BD, Kaya E. Is pipelle biopsy really adequate for diagnosing endometrial disease? Med Sci Monit 2004;10:CR271-4.
19. Antoni J, Folch E, Costa J, Foradada CM, Cayuela E, Combalia N, *et al*. Comparison of cytospat and pipelle endometrial biopsy instruments. Eur J Obstet Gynecol Reprod Biol 1997;72:57-61.
20. Sany O, Singh K, Jha S. Correlation between preoperative endometrial sampling and final endometrial cancer histology. Eur J Gynaecol Oncol 2012;33:142-4.
21. Sarwar A, Ul Haque A. Types and frequencies of pathologies in endometrial curettings of abnormal uterine bleeding. Int J Pathol 2018;1:65-71.
22. Demirkiran F, Yavuz E, Erenel H, Bese T, Arvas M, Sanioglu C. Which is the best technique for endometrial sampling? Aspiration (pipelle) versus dilatation and curettage (D&C). Arch Gynecol Obstet 2012;286:1277-82.