https://doi.org/10.29309/TPMJ/2023.30.06.7533

The Professional Medical Journal
www.theprofesional.com
2023, Volume, 30 Issue, 06

ORIGINAL ARTICLE

Effectiveness of endometrial biopsy and diagnostic dilatation and curettage aiming adequate specimen collection for histopathology for the diagnosis of endometrial carcinoma in patients with abnormal vaginal bleeding.

Ghazala Iqbal[1], Maria Razzaq[2], Munazza Munir[3], Shagufta Jabeen[4], Syed Sahar Zahra[5]

Article Citation: Iqbal G, Razzaq M, Munir M, Jabeen S, Zahra SS. Effectiveness of endometrial biopsy and diagnostic dilatation and curettage aiming adequate specimen collection for histopathology for the diagnosis of endometrial carcinoma in patients with abnormal vaginal bleeding. Professional Med J 2023; 30(06):752-757. https://doi.org/10.29309/TPMJ/2023.30.06.7533

ABSTRACT... Objective: To compare the effectiveness of endometrial biopsy and diagnostic dilatation and curettage (D&C) in terms of adequate specimen collection for histopathology for diagnosing endometrial carcinoma in patients with abnormal vaginal bleeding. **Study Design:** Randomized Controlled Trial. **Setting:** Department of Obstetrics & Gynecology, Bahawalpur Medical & Dental College, Bahawalpur. **Period:** October 2022 to March 2023. **Material & Methods:** A total of 172 peri and post-menopausal women with abnormal uterine bleeding of more than 6 months were analyzed. Randomization was 1:1 for biopsy group (n=86) and D&C group (n=86). Patients in biopsy group underwent biopsy endometrial sampling while those in D&C group underwent diagnostic D&C for endometrial sampling. In biopsy group pipelle suction curette was used to collect the specimen. In D&C group, procedures were done employing general anesthesia. Obtained samples were sent for histopathology examination. **Results:** In a total of 172 women, the mean duration of abnormal vaginal bleeding were 9.267±2.37 months and 9.174±2.33 months in in biopsy and D&C groups respectively. Adequate specimen collection was noted in 93% women in biopsy group as compare to 97.7% in D&C group (p=0.147). **Conclusion:** Diagnostic dilatation and curettage as well as endometrial biopsy were effective in terms of adequate specimen collection for histopathology. Endometrial sampling using Pipelle was safe and accurate procedure conducted in outpatient department that avoided general anesthesia.

Key words: Dilatation and Curettage, Endometrial Biopsy, Efficacy, Pipelle, Vaginal Bleeding.

INTRODUCTION

During pre and postmenopausal period of time, the incidence of abnormal uterine bleeding among all gynecological problems is beyond 70%.[1] Mainly, abnormalities in the uterine bleeding are investigated with an intention to rule out intrauterine pathology, more specifically, the cancer of the endometrium.[2,3] Literature shows that a high percentage (90%) of endometrial cancer patients exhibit irregular or post-menopausal bleeding.[4] In advanced countries, endometrial carcinoma is the commonest gynecologic malignancy with 142,200 newly diagnosed patients annually showing the rate of incidence as 12.9 per 100,000 females.[5] According to an assessment predicted in 2014, 52,630 women of the US population were expected to have endometrial carcinoma and out of those, 8,590 were likely to die from this disease.[6] Even though, the majority of the endometrial cancer women are in post-menopause phase, in 15–25%, it is diagnosed at premenopausal age.[7,8]

Generally, dilatation and fractional curettage has been considered a standard procedure to investigate abnormal uterine bleeding. The accuracy of dilatation and curettage as a diagnostic procedure still needs to be established.[9] A study showed that dilatation and curettage (D&C) had higher occurrence rates of complications when compared to office biopsy when performed for specimen adequacy.[10] In the past, various types

1. MBBS, Women Medical Officer Obstetrics and Gynecology, Jinnah Hospital, Lahore.
2. MBBS, Women Medical Officer Obstetrics and Gynecology, Rural Health Center, Lal Suhanra, Bahawalpur.
3. FCPS (Obstetrics & Gynecology), Women Medical Officer Obstetrics and Gynecology, Fatima Jinnah Hospital, Government Shehbaz Sharif Hospital, DHQ, Multan.
4. MBBS, MCPS (Obstetrics & Gynecology), Deputy Chief Medical Officer Obstetrics and Gynecology, Pakistan Atomic Energy Commission Hospital, Chasma Mianwali.
5. FCPS (Obstetrics & Gynecology), Assistant Professor Obstetrics & Gynecology, Bahawalpur Medical & Dental College, Bahawalpur.

Correspondence Address:
Dr. Syed Sahar Zahra
Department of Obstetrics & Gynecology, Bahawalpur Medical & Dental College, Bahawalpur.
syedasahar108@yahoo.com

Article received on: 03/02/2023
Accepted for publication: 13/04/2023

of instruments have been developed to implicate them in the office which are cost effective, safe, and convenient as compared to fractional D&C. Now a day, the pipelle is the most frequently used instrument along with the Pipette, the Tis-U-Trap and the Z-sampler which are quite similar to it. These instruments have good sensitive (67-96%) to detect endometrial cancer.[11,12] Arafah MA et al in another study noted that 88.5% adequate samples were obtained through D&C.[13] Rauf R et al found that 100% adequate sampling for histopathology was achieved through dilatation and curettage, whereas biopsy provided 98% success.[14]

At present, a wide range of approaches are available which has made it significantly more complicated to decide for the optimal testing algorithm. Moreover, very few individual studies are available to address these issues, therefore, diagnostic accuracy cannot be estimated precisely. So, we decided to compare the effectiveness of endometrial biopsy and diagnostic D&C in terms of adequate specimen collection for histopathology for the diagnosis of endometrial carcinoma in those women of the local population who presented with abnormal vaginal bleeding. Our research was thought to assist healthcare providers to adopt the better procedure for adequate specimen collection for histopathology for the diagnosis of endometrial carcinoma in women with abnormal vaginal bleeding. Our aim was to compare the effectiveness of endometrial biopsy and diagnostic dilatation and curettage in terms of adequate specimen collection for histopathology for diagnosing endometrial carcinoma in patients with abnormal vaginal bleeding.

MATERIAL & METHODS

This randomized controlled trial was performed at the department of obstetrics and Gynecology, Bahawalpur Medical & Dental College, Bahawalpur from October 2022 to March 2023. Sample size was calculated to be 172 (86 in each group) taking 95% confidence level, 80% power and expected adequate specimen proportion with diagnostic D&C as 88.5% and 98% with endometrial biopsy.[13,14] Approval from "Institutional Ethical Committee (IEC/22/12)" was taken. Informed and written consents were taken.

Inclusion criteria were women aged 25-50 years, irrespective of marital status, and having peri or post-menopausal abnormal uterine bleeding of duration above 6 months. Exclusion criteria were women having lower genital tract infection (bacterial vaginosis, yeast, trichomoniasis, Chlamydia), confirmed by relevant laboratory investigations. Women with history of cervical stenosis or history of premature menopause were also excluded. Pregnant females were also not excluded. Abnormal vaginal bleeding was defined as if any of following condition present: i) too frequent periods (more often than every 26 days) in premenopausal women; ii) any bleeding lasting longer than 7 days in premenopausal women; iii) an episode of bleeding, 12 months after the last menstrual period in post-menopausal women.

After inclusion in the study as per inclusion and exclusion criteria, all women underwent clinical and physical examination. Baseline demographic information was recorded. Randomization was performed adopting lottery method. Randomization was 1:1 for biopsy group and D&C group. Women in the biopsy group underwent endometrial biopsy sampling while those in D&C group had diagnostic D&C for endometrial sampling. In biopsy group, pipelle suction curette was used to collect the specimen. The device was introduced through the cervical canal into the uterine cavity and drawn outside with rotator movement to get sample. The endometrial tissue obtained was sent for histopathological examination. In D&C group, women were admitted and procedure was performed under general anaesthesia employing D&C and samples were sent for histopathology. All the procedures were done under the supervision of a consultant gynecologist having 3 years post-fellowship experience. Data was collected for efficacy in both groups. Efficacy was defined as if the procedure provided adequate specimen collection for histopathology for diagnosing endometrial carcinoma. Adequate specimen collection was defined as if endometrial specimen consisting of 8,000-12,000 well-visualized squamous epithelial

cells and 5,000 squamous cells *per* smear on histopathological findings.

Data analysis was performed using "Statistical Package for Social Sciences (SPSS)", version 26.0. Frequency and percentage were calculated for qualitative variables. Quantitative data was shows as mean and standard deviation (SD). Chi-square test was employed for the comparisons taking $p<0.05$ as significant.

RESULTS

In a total of 172 women, the mean age was 36.8±4.6 years. There were 165 (95.9%) women were married. Menopausal status was post-menopausal among 62 (36.0%) women (Table-I). The mean duration of abnormal uterine bleeding was 10.7±4.2 months.

Efficacy was seen to be 93.0% in biopsy group as compare to 97.7% in D&C group (p 0.147) and the details are presented in Figure-1.

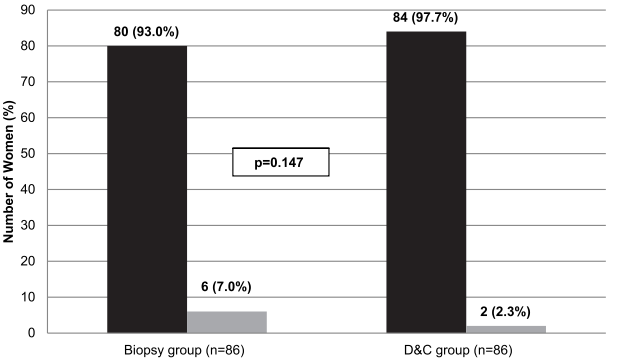

Figure-1. Distribution of efficacy (n=172)

Stratification of efficacy with respect to efficacy in both study groups is shown in table and no significant findings in these regards were observed ($p>0.05$) except for post-menopausal women ($p=0.019$).

Characteristics		Biopsy Group (n=86)	D&C Group (n=86)	P-Value
Age (years)	25-35	48 (55.8%)	38 (44.2%)	0.127
	36-50	38 (44.2%)	48 (55.8%)	
Marital status	Married	82 (95.3%)	83 (96.5%)	0.700
	Unmarried	4 (4.7%)	3 (3.5%)	
Menopausal status	Perimenupausal	54 (62.8%)	56 (65.1%)	0.751
	Postmenupausal	32 (37.2%)	30 (34.9%)	
Duration of abnormal uterine bleeding (months)	7-12	72 (83.7%)	72 (83.7%)	1
	>12	14 (16.3%)	14 (16.3%)	
BMI (kg/m^2)	<25	7 (8.1%)	5 (5.8%)	0.549
	≥25	79 (91.9%)	81 (94.2%)	

Table-I. Comparison of characteristics of women (N=172)

Characteristics		Efficacy	Biopsy Group	D&C Group	P-Value
Age (years)	25-35	Yes	44 (91.7%)	37 (97.4%)	0.259
		No	4 (8.3%)	1 (2.6%)	
	36-50	Yes	36 (94.7%)	47 (98.0%)	0.428
		No	2 (5.3%)	1 (2.0%)	
Marital status	Married	Yes	76	81 (97.6%)	0.142
		No	6 (7.3%)	2 (2.4%)	
	Unmarried	Yes	4 (100%)	3 (100%)	1
		No	-	-	
Menopausal status	Perimenopausal	Yes	52 (96.3%)	55 (98.2%)	0.537
		No	2 (3.7%)	1 (1.8%)	
	Postmenopausal	Yes	28 (87.5%)	29 (96.3%)	0.019
		No	4 (12.5%)	1 (3.3%)	
Duration of Complaints (months)	7-12	Yes	67 (93.1%)	71 (98.6%)	0.0953
		No	5 (6.9%)	1 (1.4%)	
	>12	Yes	13 (92.9%)	13 (92.9%)	1
		No	1 (7.1%)	1 (7.1%)	
BMI (kg/m^2)	<25	Yes	6 (85.7%	5 (100%)	0.377
		No	1 (14.3%)	-	
	≥25	Yes	74 (93.7%)	79 (97.5%)	0.232
		No	5 (6.3%)	2 (2.5%)	

Table-II. Stratification of efficacy with regards to study variables in both groups (N=172)

DISCUSSION

Endometrial biopsy holds a key role in the evaluation process of atypical uterine bleeding to exclude endometrial cancer, with the intent to offer medical or conservative surgical management and to avoid needless radical surgery.[15] Endometrial biopsy is contraindicated in pregnancy and avoided in cases having acute "pelvic inflammatory disease (PID)" or acute cervicitis, or vaginitis.[16] Although, fractional D&C is one of the procedures which is more invasive, it is opted for endometrial sampling due to its popularity.[17] However, around 10% of the endometrial biopsies in outpatient settings do not come up with adequate tissue.[13]

In outpatients, biopsy is performed as a noninvasive method by which 98% of the cases produced adequate endometrial sampling and if the thickness of endometrium is greater than 5mm, the chance of obtaining an adequate sample is increased[18,19], that is why we were able to obtain adequate samples in 93% of the cases for histopathological examination. The execution of biopsy sampling might not need anesthesia or analgesia and can be carried out during regular examination of the pelvis. Pipelle is authenticated as an accurate and sustainable technique of outpatient sampling by numerous researchers comparing with D&C.[20,21]

Clark et al assessed the precision of outpatient endometrial biopsy for the diagnosis of endometrial hyperplasia among women presenting abnormalities in the uterine bleeding and shared that the accuracy of endometrial biopsy regarding the diagnosis of endometrial hyperplasia was satisfactory.[22] Furthermore, it was proposed that measures should be taken for endometrial assessment, particularly when the symptoms are present persistently or it is suspected that developmental structural abnormalities within the uterus are present.[22] Sarwar et al, while detecting endometrial hyperplasia and atypia among females bleeding after menopause established that the sensitivity of Pipelle was 100%, specificity was 98%, and negative predicted value was 100%.[23] After reviewing 1535 outpatient endometrial biopsy reports of pre and post-menopausal women presenting with abnormal vaginal bleeding, Mechado et al shared the accuracy of endometrial biopsy through the Cornier Pipelle as a way for the diagnosis of endometrial cancer and atypical endometrial hyperplasia. They established that in the detection of endometrial carcinoma and atypical hyperplasia, the Cornier Pipelle was a good tool as it had 84.2% sensitivity, 99.1% specificity, 96.9% accuracy, showing positive predictive value as 94.1% and negative predictive value as 93.7%.[24]

Gloria et al included 360 patients of endometrial carcinoma and evaluated them for the accuracy of pre-surgery endometrial sampling in the diagnosis of high-grade endometrial tumors.[25] Pipelle endometrial sampling had 93.8% sensitivity in the diagnosis of low-grade endometrial cancer and 99.2% sensitivity in the diagnosis of high-grade endometrial cancer.[25] In a meta-analysis carried out by Dijkhuijen et al, endometrial sampling devices were assessed for their accuracy to detect endometrial carcinoma and atypical hyperplasia.[26] They found endometrial biopsy with the Pipelle to be a good technique to detect endometrial carcinoma and atypical hyperplasia among women presented with pre and postmenopausal bleeding.[26]

The present study seems to provide useful insights about our experience regarding comparative evaluation of the role biopsy and D&C for the obtainment of adequate sample for histopathological examination among women with abnormal uterine bleeding of duration above 6 months. We could have noted the prevalence of endometrial cancer as a result of histopathological examination in the current set of women but that was beyond the scope of our study.

CONCLUSION

Diagnostic dilatation and curettage as well as endometrial biopsy were effective in terms of adequate specimen collection for histopathology. Endometrial sampling using Pipelle was safe and accurate procedure conducted in outpatient department that avoided general anesthesia.

REFERENCES

1. Mahajan N, Aggarwal M, Bagga A. **Health issues of menopausal women in North India.** J Midlife Health. 2012; 3(2):84-87. doi:10.4103/0976-7800.104467

2. Rabban JT, Gilks CB, Malpica A, Xavier M, Mittal K, Mutter GL, et al. **Issues in the differential diagnosis of uterine low-grade endometrioid carcinoma, including mixed endometrial carcinomas: Recommendations from the International Society of Gynecological Pathologists.** Int J Gynecol Pathol. 2019; 38 Suppl 1(Iss 1 Suppl 1):S25-S39. doi:10.1097/PGP.0000000000000512

3. O'Flynn H, Jones E, Njoku K, Rana D, Shelton D, Narine N, et al. **Cytology for the diagnosis of endometrial cancer in symptomatic women.** Cochrane Database Syst Rev. 2021; 2021(4):CD014560. doi:10.1002/14651858.CD014560

4. Boeckstaens S, Dewalheyns S, Heremans R, Vikram R, Timmerman D, den Bosch TV, et al. **Signs and symptoms associated with uterine cancer in pre- and postmenopausal women.** Heliyon. 2020; 6(11):e05372. doi:10.1016/j.heliyon.2020.e05372

5. Jemal A, Bray F, Center MM, Ferlay J, Ward E, Forman D. **Global cancer statistics [published correction appears in CA Cancer J Clin.** 2011 Mar-Apr;61(2):134]. CA Cancer J Clin. 2011; 61(2):69-90. doi:10.3322/caac.20107

6. Siegel R, Ma J, Zou Z, Jemal A. **Cancer statistics, 2014 [published correction appears in CA Cancer J Clin.** 2014 Sep-Oct;64(5):364]. CA Cancer J Clin. 2014; 64(1):9-29. doi:10.3322/caac.21208

7. Barakat RR, Bundy BN, Spirtos NM, Bell J, Mannel RS; **Gynecologic Oncology Group Study. Randomized double-blind trial of estrogen replacement therapy versus placebo in stage I or II endometrial cancer: A Gynecologic Oncology Group Study.** J Clin Oncol. 2006; 24(4):587-592. doi:10.1200/JCO.2005.02.8464

8. Duska LR, Garrett A, Rueda BR, Haas J, Chang Y, Fuller AF. **Endometrial cancer in women 40 years old or younger.** Gynecol Oncol. 2001; 83(2):388-393. doi:10.1006/gyno.2001.6434

9. Leather AT, Savvas M, Studd WW. **Endometrial histology and bleeding patterns after 8 years of continuous combined estrogen and progesterone therapy in postmenopausal women.** Obstet Gynecol. 1991; 78:1008-10.

10. Chambers JT, Chambers SK. **Endometrial sampling: When? where?** why? with what?. Clin Obstet Gynecol. 1992; 35:28-39.

11. Narice BF, Delaney B, Dickson JM. **Endometrial sampling in low-risk patients with abnormal uterine bleeding: A systematic review and meta-synthesis.** BMC Fam Pract. 2018; 19(1):135. doi:10.1186/s12875-018-0817-3

12. Ilavarasi CR, Jyothi GS, Alva NK. **Study of the efficacy of pipelle biopsy technique to diagnose endometrial diseases in abnormal uterine bleeding.** J Midlife Health. 2019; 10(2):75-80. doi:10.4103/jmh.JMH_109_18

13. Arafah MA, Al-Rikabi AC, Aljasser R, Adi Y. **Adequacy of the endometrial samples obtained by the uterine explora device and conventional dilatation and curettage: A comparative study.** Int J Reprod Med. 2014; 2014:578193.

14. Rauf R, Shaheen A, Sadia S, Waqar F, Zafar S, Sultana S, et al. **Outpatient endometrial biopsy with pipelle vs diagnostic dilatation and curettage.** J Ayub Med Coll. 2014; 26(2):145-48.

15. Inal ZO, Inal HA, Kucukosmanoglu I, Kucukkendirci H. **Assessment of endometrial sampling and histopathological results: Analysis of 4,247 cases.** Eurasian J Med. 2017; 49(1):44-47. doi:10.5152/eurasianjmed.2017.16269

16. Williams PM, Gaddey HL. **Endometrial biopsy: Tips and pitfalls.** Am Fam Physician. 2020; 101(9):551-556.

17. Kim DH, Seong SJ, Kim MK, et al. **Dilatation and curettage is more accurate than endometrial aspiration biopsy in early-stage endometrial cancer patients treated with high dose oral progestin and levonorgestrel intrauterine system.** J Gynecol Oncol. 2017; 28(1):e1. doi:10.3802/jgo.2017.28.e1

18. Polena V, Mergui JL, Zerat L, Sananes S. **The role of Pipelle Mark II sampling in endometrial disease diagnosis.** Eur J Obstet Gynecol Reprod Biol. 2007; 134:233-7.

19. Elsandabesee D, Greenwood P. **The performance of Pipelle endometrial sampling in a dedicated postmenopausal bleeding clinic.** J Obstet Gynecol. 2005; 25:32-4.

20. 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. doi:10.4103/abr.abr_28_20

21. Tanko NM, Linkov F, Bapayeva G, Ukbassova T, Kaiyrlykyzy A, Aimagambetova G, et al. **Pipelle Endometrial Biopsy for Abnormal Uterine Bleeding in Daily Clinical Practice: Why the Approach to Patients Should Be Personalized?.** J Pers Med. 2021; 11(10):970. Published 2021 Sep 28. doi:10.3390/jpm11100970

22. 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.

23. Sarwar A, Haque A. **Types and frequencies of pathologies in endometrial curetting of abnormal uterine bleeding.** Int J Pathol. 2005; 3:65-70.

24. Machado F, Moreno J, Carazo M, Leon J, Fiol G, Serna R. **Accuracy of endometrial biopsy with the cornier pipelle for diagnosis of endometrial cancer and atypical hyperplasia.** Eur J Gynaecol Oncol. 2003; 24:279-81.

25. Huang GS, Gebb JS, Einstein MH, Shahabi S, Novetsky AP, Goldberg GL. **Accuracy of preoperative endometrial sampling for the detection of high-grade endometrial tumors.** Am J Obstet Gynecol. 2007; 196:243.e1-5.

26. 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.

AUTHORSHIP AND CONTRIBUTION DECLARATION

No.	Author(s) Full Name	Contribution to the paper	Author(s) Signature
1	Ghazala Iqbal	Methodology, Discussion.	
2	Maria Razzaq	Study concept, Literature Review.	
3	Munazza Munir	Proof reading, Critical Revisions.	
4	Shagufta Jabeen	Study Concept, Data analysis.	
5	Syed Sahar Zahra	Data collection, Drafting.