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Original Article

Diagnostic Value of Pipelle Endometrial Sampling in Comparison with Dilatation and Curettage among Patients with Abnormal Uterine Bleeding

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Abstract

Background and Objectives: We compared endometrial sampling by Pipelle endometrial curette with conventional dilatation and curettage (D&C) in patients with abnormal uterine bleeding.

Methods: A comparative study was conducted in the Department of Obstetrics and Gynaecology at SKIMS Srinagar from September 2018 for the period of 18 months and was a time bound study. Eighty (80) cases of abnormal uterine bleeding attending the outpatient clinic were included in the study. The Pipelle was introduced without performing cervical dilatation and withdrawn outside the uterus with a rotatory movement to get sample. The patient was then transferred to the operation theater for dilatation and curettage. Thereafter, both the samples were sent to pathologist, who was blinded to methods of sampling. The histopathology reports of both samples were compared.

Results: An adequate sample was obtained in 93.8% of cases by Pipelle and in 100% of cases by D&C. Pipelle had a sensitivity, specificity, positive predictive value, and negative predictive value of 100% for diagnosing endometrial carcinoma, endometrial hyperplasia without atypia and with atypia and proliferative endometrium. Pipelle also had high diagnostic sensitivity, specificity, and negative predictive value (100%, 98.33%, and 100%, respectively) for secretory endometrium and sensitivity (100%) and positive predictive value (83.33%), but high specificity (98.67%) and negative predictive value (100%) for endometritis. Samples were labeled as inadequate for histology of polyp by pipelle.

Conclusion: Pipelle device is an easy and convenient method of getting tissue diagnosis. It can be done as an outpatient procedure without anesthesia, when compared to D&C which is done under anesthesia. The sensitivity and specificity of this procedure in detecting endometrial pathologies were comparable with the standard procedure of D&C.

Key words: Bleeding, Endometrial, Uterine

INTRODUCTION

Abnormal uterine bleeding accounts for more than 70% of all gynecological problems in the peri and post-menopausal women.[1] The bleeding could be a sign of an underlying localized condition including infection, benign, and malignant pathology. Abnormal uterine bleeding is a common reason for gynecological consultations. It occurs when women experiences a change in her menstrual blood loss or if the degree of blood loss, or vaginal bleeding pattern differs from that experienced by age-matched general female population. AUB is the overarching term used to describe any departure from normal menstrual cyclical pattern.The key characteristics are regularity, frequency, heaviness of flow, and duration of flow, but each of these may exhibit considerable variability. Endometrial sampling for histopathology is important in the assessment of abnormal uterine bleeding. The endometrial biopsy is a surgical procedure that involves taking a tissue sample of the lining the uterus. The histological evaluation of tissue aids the clinician in forming a diagnosis. The main reason for performing endometrial biopsy in women with abnormal uterine bleeding is to confirm the benign nature of the problem, by ruling out endometrial carcinoma, so that conservative surgery can be offered and unnecessary radical surgery can be avoided. Various methods of endometrial samplings

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are used in practice. Ultrasonographic measurement of central endometrial thickness is one of the commonly used non-invasive methods although the cut of limit for endometrial thickness is still debated.[2] However, a thin and regular endometrium is reliable exclusion of endometrial carcinoma.[3] Dilatation and curettage are an invasive inpatient procedure performed under general anesthesia. Outpatient invasive methods include hysteroscopic directed biopsy or endometrial biopsy with various endometrial samplers including the pipelle device.Endometrial biopsy is an important even if hysteroscopy is normal.[4] The dilatation of the cervix and curettage of the uterine cavity under general anesthesia have long been considered the gold standard for the assessment of abnormal uterine bleeding. This method requires laboratory investigation, hospitalization, and carries the added risk of general anesthesia, infection, and perforation.[5,6] This has led to the advent of new and simple method for endometrial sampling, various devices are in the market today including pipelle curette.

MATERIALS AND METHODS

Eighty patients 35 years of age and older who presented with abnormal uterine bleeding were enrolled in this study after providing informed consent to participation. Patients with lower genital tract infections, known cervical stenosis, possibility of pregnancy, patient with coagulopathy, and central endometrial thickness of <4 mm were excluded from the study. A consecutive sampling technique was used for eligible women. A detailed clinical assessment of patients performed in the outpatient department included a history, examination, and baseline investigations, including pelvic ultrasound. The diagnostic intervention was endometrial sampling by the pipelle device and the diagnostic reference standard was endometrial sampling by D&C. First, the pipelle was introduced without performing cervical dilatation and then withdrawn outside with a rotatory movement to get the sample, which was labeled as A. The pipelle procedure was followed by the standard D&C procedure and that sample was labeled as B. Both samples were sent to a pathologist, who was blinded as to the method of sample collection, for histopathology assessment. The histopathology report of the pipelle sample was compared with that of the D&C sample and the D&C report was used as the gold standard. Histopathology reports were categorized as proliferative, secretory, and endometrial hyperplasia with atypia or without atypia and carcinoma. The primary outcome measure was the validity of the pipelle technique for determining the histopathology of the endometrium in women who presented with abnormal uterine bleeding, especially for ruling out endometrial carcinoma. The secondary outcome measure was the adequacy of the tissue for histopathology, associated complications of the procedure and its failure rate. The sample was labeled as inadequate by the histopathologist when no endometrial tissue was present in the specimen sent.

RESULTS

Of the 80 patients studied, 43 (53.8%) were perimenopausal and 37 (46.2%) were postmenopausal. Pre-menopausal women included in the study had heavy menstrual bleeding (HMB) as their main complaint. Frequent menstrual bleeding was the second most common complaint in this group. Irregular menstrual bleeding was the third most common complaint in this group. Post-menopausal bleeding was the main complaint among post-menopausal women.

Out of the 80 patients studied, 43 (53.8%) patients were having some medical illness and 37 (46.2%) were not having any significant medical illness. Hypertension was the commonest medical illness present in 24 patients (30%); followed by diabetes mellitus (DM) in 11 (13.8%) patients who were already on some form of treatment at the time of admission. Ca Breast was present in 3 (3.8%) patients, CKD and thyroidectomy were present in 1 (1.2%) patient. In 46 (57.5%) patient had bulky uterus on per vaginum examination and 34 (42.5%) had normal uterus [Table 1].

Out of 80 patients, scanty tissue was reported by the pathologist in 5 (6.2%) patients in case of pipelle sampling and adequate in 75 (93.8%) patients of pipelle sampling. However, in D&C, tissue samples were adequate in 80 (100%) patients [Tables 2 and 3].

Validity of Pipelle sampling for each endometrial condition

The sensitivity, specificity, and positive predictive value of Pipelle sampling is 100% with regards to diagnosis of proliferative endometrium, endometrial hyperplasia with or without atypia, endometrial carcinoma, and disordered proliferative endometrium. With regard to diagnosis of secretory endometrium, the sensitivity and specificity are 100% and 98.33%, respectively. Whereas positive predictive values and negative predictive value were 95.24% and 100%, respectively. Similarly, for polyp sensitivity and specificity are 3.75% and 100%, respectively.

DISCUSSION

Endometrial sampling for histopathology is important in the assessment of abnormal uterine bleeding. The endometrial biopsy is a surgical procedure that involves taking a tissue sample of the lining the uterus. The histological evaluation

Table 1: Adequacy of Sampling in Studied Subjects

Tissue sample	No of patients	Percentage
D&C		
Adequate	80	100.0
Scanty	0	0.0
Pipelle		
Adequate	75	93.8
Scanty	5	6.2

Table 2: Correlation between endometrial thickness (ET) and sufficiency of sample in the patients studied in pipelle biopsy

	Tissue sample		Total
	Sufficient	Scanty	
ET			
≤6	0	1	1
	0%	100.0%	100.0%
7–9	16	3	19
	84.21%	15.78%	100.0%
10–12	29	1	30
	96.7%	3.3%	100.0%
13–15	17	0	17
	100.0%	0.0%	100.0%
16–18	9	0	9
	100.0%	0.0%	100.0%
19+	4	0	4
	100.0%	0.0%	100.0%
Total	75	5	80
	93.8%	6.2%	100.0%

Table 3: Specific histopathological findings reported with pipelle and D&C

	HPE pipelle (#80)		HPE D&C (#80)	
	Frequency	% age	Frequency	% age
Proliferative endometrium	26	32.5	26	32.5
Secretory endometrium	21	26.25	22	27.50
Endometrial hyperplasia without atypia	10	12.5	10	12.4
Endometrial hyperplasia with atypia	7	8.7	7	8.7
Endometritis	5	6.25	6	7.6
Endometrial carcinoma	4	5.0	4	5.0
Disordered proliferative endometrium	2	2.4	2	2.4
Polyp	0	0	3	3.8
No report	5	6.25	0	0

of tissue aids the clinician in forming a diagnosis. The main reason for performing endometrial biopsy in women with abnormal uterine bleeding is to confirm the benign nature of the problem, by ruling out endometrial carcinoma, so that conservative surgery can be offered and unnecessary radical surgery can be avoided. In our study, tissue obtained for histopathology was adequate in 100% cases when the procedure was D&C, while it was adequate in 93.8% of cases by Pipelle. Thus, Pipelle had comparable tissue adequacy with D&C. Five cases were labeled as inadequate for histopathological reporting. Out of those five cases, three were having endometrial polyp, one was having secretory endometrium, and one was having endometritis.

In the study by Abdelazim *et al.*,[7] the pipelle and D&C were compared and the authors reported 100% of sufficient sample in conventional D&C and 97.7% for pipelle that is higher by both methods in comparison to our study. It may be due to different techniques and instruments and also pathologist's experience. In a study by Naderi *et al.*,[8] the sufficiency rates were 91.6% and 98.3% by pipelle and D&C, respectively. The study by Mousavifar *et al.*,[9] reported 94% of sufficiency rate for pipelle sample. The mean endometrial thickness by means of TVS was 12.05 ± −3.926 scanty tissue was obtained in one patient with ET <6 mm, in three patients with ET of 7–9 mm and in 1 patient with ET of 10–12 mm in Pipelle biopsy. However, sample was adequate for all samples in case of diagnostic D&C.

Elsandabesee and Greenwood[10] examined the factors that would affect the adequacy of endometrial samples in terms of their suitability for histopathological examination. He found that the ability to obtain an adequate endometrial sample was primarily affected by the endometrial thickness. There is only a 27% of probability of getting an adequate endometrial sample in the group of women with an endometrial thickness of <5mm. However, when the endometrial thickness is ≤4, little can be gained from endometrial sampling as the chance of getting an adequate sample is small. The analysis revealed that the procedure avoided the need for hysteroscopy in 61.5% of cases with an endometrial thickness of >4mm. No cases of endometrial cancer were missed after Pipelle sampling.

The most common endometrial pattern identified was proliferative endometrium 26 (32.5%) followed by secretory endometrium 21 (26.25%), endometrial hyperplasia without atypia 10 (12.5%), endometrial hyperplasia with atypia 7 (8.7%), endometrial carcinoma 4 (5%), and polyp 3 (3.8%). The sensitivity and specificity of pipelle biopsy and D&C in detecting proliferative endometrium, endometrial carcinoma, and endometrial hyperplasia with or without atypia are 100% and 100%, respectively. The sensitivity and specificity of pipelle biopsy in detecting secretory endometrium are 100% and 98.33%, respectively.

Fakhar *et al.*,[11] evaluated 100 patients with AUB. D&C and pipelle were chosen as a method for sampling the endometrium and histopathology report was compared taking D&C as a gold standard. In 98 of the 100 patients, the sample was adequate as compared to 100 in D&C. Diagnosis of carcinoma, hyperplasia, and secretory endometrium

with pipelle showed a sensitivity and specificity of 100%. Sensitivity and specificity for diagnosing proliferative endometrium were 94% and 93%, respectively. Two samples were inadequate by Pipelle. In both these cases, D&C report showed polyp. The conclusion derived was that hyperplasia and malignancy could be detected with high sensitivity and specificity using Pipelle technique. Our results were consistent with study of Alliratnam *et al.*,[12] who found pipelle biopsy was 100% sensitive and 100% specific in detecting secretory endometrium. It can be inferred from our study that Pipelle biopsy is reliable in acquiring adequate endometrial sample and histopathological results of Pipelle were comparable with dilatation and curettage. Pipelle biopsy is also safe, cost-effective, and an office procedure. It is also an easy and convenient method of obtaining tissue diagnosis. An additional advantage of pipelle biopsy is that it does not require anesthesia.

Fakhar *et al.*[11] reported the cost per case was £39.46 for dilatation and curettage as compared to £4.74 for the Pipelle. The cost included the procedure, anesthesia, surgery, and inpatient charges. The cost of Pipelle sampling was Rs.450, compared to Rs.2000 for D&C, which was done under anesthesia. Although the higher inadequate tissue rate of Pipelle sampling was taken into consideration, Pipelle was certainly more cost effective than D&C.

CONCLUSION

Pipelle device is an easy and convenient method of getting tissue diagnosis. It can be done as an outpatient procedure without anesthesia, when compared to D&C which is done under anesthesia. The sensitivity and specificity of this procedure in detecting endometrial pathologies were comparable with the standard procedure of D&C.

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