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Diagnostic Accuracy of Endometrial Suction Kit for Collection of Endometrial Sample Compared to Fractional Curettage Procedure in Diagnosis of Endometrial Hyperplasia/Endometrial Carcinoma

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KEYWORDS

Endometrial Suction Kit, Fractional Curettage, Endometrial Hyperplasia, Endometrial Carcinoma.

ABSTRACT:

Background: Endometrial carcinoma is one of the most common gynecological malignancies in women. The diagnosis of the disease at early stage or at premalignant condition is crucial for the disease prognosis.

Objective: To find out the diagnostic accuracy of the endometrial suction kit for diagnosing endometrial hyperplasia / endometrial carcinoma when fractional curettage is considered as gold standard.

Methods: After taking informed written consent and matching eligibility criteria, a total eighty-four women from 40-70 years of age, were selected in this cross-sectional analytic study. This study was conducted in the department of gynecological oncology, BSMMU for one year from January 2019 to December 2019. At first endometrial sample was collected by Endometrial suction kit without anesthesia or analgesia and without cervical dilatation at ward. Then on the same day, fractional curettage was performed under general anesthesia in operating theater. The histopathology reports of the samples obtained by both procedures were compared and diagnostic accuracy of endometrial suction kit was determined. Histopathology reports of the samples obtained by fractional curettage was considered as the gold standard. Sampling duration, costs and complications of the both procedures were compared. Statistical analyses of the results were obtained by using window-based computer software devised with Statistical Packages for Social Sciences (SPSS-22).

Results: The sensitivity, specificity, accuracy, PPV and NPV of Endometrial suction kit device for the diagnosis of endometrial hyperplasia with or without atypia and endometrial carcinoma were 100.0%. The sensitivity, specificity, accuracy, PPV and NPV of the device for diagnosing endometrial polyp were 31.3%, 98.5%, 85.7%, 83.3% and 85.9% respectively. The device had sensitivity, specificity, accuracy, PPV and NPV of 86.5%,89.4%,86.5%,89.4%,88.1% respectively in the evaluation of normal histology (proliferative, secretory, atrophic endometrium, chronic endometritis). About 87% of the samples obtained by Fractional curettage and 75% of the samples obtained by the Endometrial suction kit device were adequate for histopathological examination. But the adequacy of endometrial sample obtained by two methods had good agreement. Inadequate tissue was more frequent and polyp

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was less detected by endometrial suction kit biopsy than fractional curettage but the difference was not statistically significant (p=0.175). Endometrial suction kit procedure is also cost-effective and less time-consuming procedure. There was no major complication in both procedures.

Conclusion: The Endometrial suction kit is a cost-effective, accurate outpatient procedure and has a high sensitivity and specificity for the detection of endometrial hyperplasia and endometrial carcinoma. So, it can be used as an initial diagnostic procedure.

Introduction

Endometrial cancer is the sixth most commonly occurring cancer in women and the 15th most commonly occurring cancer in both sexes as per GLOBOCAN 2018.[1] There were over 380,000 new cases of endometrial cancer recorded in 2018 and it was around 320,000 in 2012. Number of deaths from endometrial cancer was 89,929 in 2018 which was 76,200 in 2012.[1,2] In Bangladesh, number of new cases of endometrial cancer was recorded 1015 and number of deaths was 408 in 2018.[3] So, in this era of increasing incidence of endometrial cancer morbidity and mortality throughout the world, it would be social and economic benefit from a screening tool that could be used for early detection, leading to earlier treatment of endometrial carcinoma.

Endometrial cancer is the most common form of uterine cancer.[4] About 75-80% of endometrial cancers are diagnosed at early stage and of endometroid histology with a 5-year survival of 80-90%.[5] In contrast, 5-year survival for late stage (stage IV) endometrial cancer ranges from 20% to 25%.[4] So earlier the diagnosis of endometrial carcinoma is made, the better the survival rate. American College of Obstetrics and Gynecology and the Society of Gynecologic Oncology do not recommend routine screening for uterine cancer.[6] Screening for endometrial carcinoma or its precursors is justified for; postmenopausal women on unopposed exogenous estrogens, women from families with Lynch syndrome (HNPCC syndrome), premenopausal women with anovulatory cycles, such as those with polycystic ovarian disease.[4] Asymptomatic women on tamoxifen therapy do not require endometrial screening.[7]

Endometrial hyperplasia frequently results from chronic unopposed estrogen stimulation.[8] The most common presenting symptom of endometrial hyperplasia is abnormal uterine bleeding.[9]Endometrial hyperplasia accounts for approximately 15% of women presenting with postmenopausal bleeding.[10]

In a study by the Gynecologic Oncology Group, 42% of women with complex atypical endometrial hyperplasia on initial sampling had endometrial cancer on subsequent surgery.[12] Diagnosis of Endometrial Intraepithelial Neoplasia (EIN) carries a 45 times greater risk of progression to endometrioid type of endometrial cancer after 1 year.[13]

For the diagnosis of endometrial pathologies, endometrial sampling is performed using aspiration (office biopsy), dilatation and curettage (D&C) and hysteroscopic methods.[14] Transvaginal sonography and Pap smear may also be performed, but are insufficient modalities used alone for persistent abnormal bleeding.[15]

Papanicolaou (Pap) smear is ineffective for endometrial cancer screening due to low accuracy (25%).[16]

TVS is recommended as first line investigation in abnormal uterine bleeding.[18] Women with postmenopausal bleeding and an endometrial thickness > 4 mm should be further evaluated with endometrial sampling.[19] The probability of endometrial pathology is strongly reduced when endometrial thickness is ≤4 mm on TVS.[20]

Diagnostic hysteroscopy provides a good visualization of the uterine cavity without cervical dilation and usually without anesthesia (with flexible fiber-optic hysteroscopes).[21-22] It permits in diagnosing focal lesions such as polyp and early foci of cancer that are missed with curettage. The potential complications of hysteroscopy are air and gas embolism, fluid overload, haemorrage and vasovagal reaction.[26]

D&C was traditionally the method of choice for investigating postmenopausal bleeding.[20] There are also risk of general anaesthesia, uterine perforation, haemorrage and infection.[27-28]

All suspected endometrial carcinoma patients should undergo an endometrial biopsy and an endocervical curettage.[4] Fractional curettage technique allows sampling of both the endometrial and the endocervical mucosa. Its

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accuracy is 90%.[16]And it is especially useful for evaluating possible extension of endometrial carcinoma to the endocervix.[29] However, uterine perforation can occur with this technique and create pain and discomfort to the patient.[31]

Now there is a trend toward minimally invasive investigations. So, several uterine sampling devices (i.e. Pipelle, Vabra aspirator, Endosampler) have been developed for screening of endometrial lesions since 1970s.[32] Pipelle, procedure is less time consuming and least expensive. It is conducted in outpatient setting and does not require hospitalization, anaesthesia and cervical dilatation.[33] Pipelle samples only 4% of endometrial surface but has a sensitivity of 67–97%.[34] The detection rates for endometrial carcinoma using the Pipelle device were found 99.6% in postmenopausal women and 91% in premenopausal women.[35] As acceptability of these devices has been established, these methods can be used in tertiary care practice as well as in primary care setting.[36] Pipelle endometrial sampling can be performed during the first visit of a patient thereby decreasing the delay in diagnosis and reducing repeated visit for anaesthetic fitness.[37] But as it is a blind procedure, it can miss focal lesions in the uterine cavity, such as polyp, and inadequate sampling may be obtained, particularly in post-menopausal women with thin endometrium.[38-39]

The Endometrial Suction Kit is another minimally investigation which is used to obtain endometrial tissue from lining and superficial layers of the uterine endometrial wall for histological study.[40] The Endometrial suction kit is a disposable thin plastic tube, slightly curved at the tip which contains a single aperture, 3 mm in diameter with a 10 ml syringe. The full withdrawn syringe becomes locked into position via a small stainless-steel mechanism, generating a relatively strong vacuum effect.

The aim of this study is to determine the diagnostic accuracy of endometrial suction kit biopsy in obtaining endometrial tissue in terms of adequacy of the sample and to establish its reliability by comparing the histopathology report obtained by endometrial suction kit with that of fractional curettage for diagnosing endometrial hyperplasia and endometrial cancer among high risk women.

Materials and Methods

This was a cross-sectional analytic study was carried out in the department of Gynaecological Oncology. Bangabandhu Sheikh Mujib Medical University, Dhaka. The study was other conducted for one year. (From January, 2019 to December,2019)

The study population included the women between 40 to 70 years having.

Determination of sample size was done by following formula

$$n = \frac{Z^2\ \alpha/2\text{pq}}{\text{d}}$$

$Z_{\alpha/2}$ = 1.96 for 5% level of significance[2]

P =the prevalence rate.

q=1-p

d=level of absolute error.

Here,

$Z_{\alpha/2}$ =1.96

p=0.058 (prevalence rate, expressed as a percentage)

q=0.942

d=0.05

Then,

$$n= \frac{1.96^2\times0.058\times0.942}{0.05^2}$$

=84(estimated sample size)

WHO guideline for sample size calculation

Consecutive non-random sampling technique was applied. Patient with abnormal uterine bleeding older than 40 years of age, Post-menopausal bleeding up to 70 years of age, Post-menopausal endometrial thickness ≥ 5mm, Breast cancer patients on tamoxifen but presenting with vaginal bleeding were included in this study.

Patients with co-morbidities like PID, acute cervicitis, vaginitis, pyometra, cervical stenosis, carcinoma cervix, Pregnant women, Postmenopausal women with endometrial thickness < 4mm, Women with - Bleeding disorders, Endocrine disorder (Thyroid diseases), On anti-coagulant therapy, on contraception were excluded from this study.

Study procedures: Patients were enrolled in the study based on inclusion and exclusion criteria using a structured questionnaire. Informed written consent was taken from the respondents and the study protocol was approved by the institutional ethics committee. Data was collected by interview, physical examination, transvaginal sonography. All patients were subjected to TVS to determine the

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endometrial thickness to fulfill the selection criteria. At first endometrial sample was taken by endometrial suction kit in ward through undilated cervix without any anesthesia (topical or general anesthesia) or analgesic agent. Then on the same day each respondent was transferred to operating theater where fractional curettage was performed under general anesthesia to maintain synchronization during sampling. All the samples were placed in separate containers containing formalin and were sent to pathologist for histopathology reports. The pathologist who examined the samples was not aware of the method of sampling. After completion of study, the histopathology reports of both samples were compared. Histopathology reports of the samples obtained by fractional curettage was considered as the gold standard. Sampling duration was calculated. Also, the cost of the both procedures was estimated. Complications such as per vaginal bleeding, uterine perforation and vasovagal shock due to cervical stimulation with endometrial suction kit and fractional curettage were noted.

At every step of data collection, processing and analysis, constant vigilance & precaution was sought; collected data was rechecked to avoid wrong entry; statistical analysis was rechecked by an expert. Data sheet was checked by the supervisor from time to time.

Data analysis and interpretation: Statistical analyses of the results were obtained by using window-based computer software devised with Statistical Packages for Social Sciences (SPSS-22). Quantitative variables were presented as means ± standard deviations. Quantitative observations were indicated by percentages. The test of significance was performed by ANOVA test and Chi square test was performed for qualitative variables. The results were presented in tables. *p* value < 0.05 was considered statistically significant. Kappa test was done to measure the agreement between endometrial suction kit with fractional curettage. The sensitivity, specificity, positive predictive value, negative predictive value and the accuracy of the histopathological result of Endometrial suction kit were calculated taking the result of fractional curettage method as the gold standard.

Result

Table I: Distribution of the endometrial pathology with endometrial thickness (mm) (n=84)

Endometrial pathology	**Endometrial thickness (mm) by TVS**		
	Mean±SD	**Range(min-max)**	***p* value**
Endometrial cancer	24.6±6.6	14-35	0.001[s]
Simple hyperplasia with atypia	23.3±-		
Simple hyperplasia without atypia	23.04±8.78	16.7-43	
Endometrial polyp	20.85±10.37	12-36.8	
Normal	11.6±5.7	4.3-25	
Couldn't report because of Inadequate tissue	5.4±0.7	4.2-8.4	

s= significant

p value reached from ANOVA test

Table I: The mean endometrial thickness was 24.6±6.6 mm, 23.3±- mm, 23.04±8.78 mm, 20.85±10.37 mm, 11.6±5.7 mm, 5.4±0.7 mm in endometrial cancer, simple hyperplasia with atypia, endometrial hyperplasia without atypia, endometrial polyp, normal histology and inadequate tissue respectively. The difference was statistically significant ($p<0.05$).

Table II: Distribution of the respondents by histopathological reports of the sample obtained by endometrial suction kit (ESK) (n=84) and Fractional Curettage (FC) (n=84)

Histopathological reports of tissue obtained by ESK	**Number of the respondents**	**Percentage (%)**
Endometrial cancer	10	11.9

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Simple hyperplasia with atypia	1	1.2
Simple hyperplasia without atypia	9	10.7
Endometrial Polyp	6	7.1
Normal	37	44.1
Couldn't report because of Inadequate tissue	21	25.0
Histopathological reports of tissue Obtained by FC	Number of the respondents	Percentage
Endometrial cancer	10	11.9
Simple hyperplasia with atypia	1	1.2
Simple hyperplasia without atypia	9	10.7
Endometrial Polyp	16	19.0
Normal	37	44.1
Couldn't report because of Inadequate tissue	11	13.1

Table II: Sample obtained by endometrial suction kit. Ten (11.9%) samples were diagnosed as endometrial carcinoma, 9(10.7%) simple hyperplasia without atypia,1(1.2%) simple hyperplasia with atypia, 6(7.1%) endometrial polyps by fractional curettage. Ten (11.9%) samples were diagnosed as endometrial carcinoma, 9(10.7%) simple hyperplasia without atypia, 1(1.2%) simple hyperplasia with atypia, 16(19%) endometrial polyps.

Table III: Association of endometrial pathologies in ESK and FC

Endometrial pathology	**Methods of endometrial sampling**		***p* value**
	ESK (%)	**F/C (%)**	
Endometrial cancer	10 (11.9)	10 (11.9)	0.175^{ns}
Simple hyperplasia with atypia	1(1.2)	1 (1.2)	
Simple hyperplasia without atypia	9 (10.7)	9(10.7)	
Endometrial polyp	6 (7.1)	16(19.0)	
Normal	37 (44.1)	37(44.1)	
Couldn't report because of Inadequate tissue	21 (25.0)	11 (13.1)	

s= significant

p value reached from Chi-square test

Table III: Ten (11.9%) respondents had malignant pathology in ESK and 10(11.9%) in F/C. This was not statistically significant ($p>0.05$).

Table IV: Comparison of sample obtained by two methods among respondents

Methods	**Adequate**		**Inadequate**		***p* value**
	N	**%**	**N**	**%**	

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Fractional curettage	73	86.9	11	13.1	0.001[s]
Endometrial suction kit	63	75.0	21	25.0	

s= significant
P value reached from Chi-square test
Kappa = 0.623

Table IV: Out of 84 samples, 73(86.9%) were adequate and 11(13.1%) were inadequate by Fractional curettage. On the other hand, 63(75.0%) and 21(25.0%) were adequate and inadequate samples respectively while detected by Endometrial suction kit device. The results of two methods are Kappa = 0.623 with $p<0.05$ considered good agreement.

Kappa	Interpretation
≤0.00	No agreement
0.01-0.20	Poor agreement
0.21-0.40	Slight agreement
0.41-0.60	Fair agreement
0.61-0.80	Good agreement
0.81-0.92	Very good agreement
0.93-1.0	Excellent agreement

Table V: The sensitivity, specificity, predictive values and accuracy of the endometrial suction kit device for diagnosing endometrial histopathology among study respondents

Variables	**Sensitivity**	**Specificity**	**Accuracy**	**PPV**	**NPV**
Endometrial cancer	100.0	100.0	100.0	100.0	100.0
Simple hyperplasia with atypia	100.0	100.0	100.0	100.0	100.0
Simple hyperplasia without atypia	100.0	100.0	100.0	100.0	100.0
Endometrial polyp	31.3	98.5	85.7	83.3	85.9
Normal	86.5	89.4	86.5	89.4	88.1
Couldn't report because of Inadequate tissue	90.9	84.9	85.7	47.6	98.4

Table V: The sensitivity, specificity, accuracy, PPV and NPV of Endometrial suction kit device for the diagnosis of endometrial cancer, simple hyperplasia with atypia, simple hyperplasia without atypia are 100.0%.

Table VI: Complications, cost and duration of procedures

Complications of procedures	**ESK**		**F/C**	
	N. of respondents (N=84)	**Percentage (%)**	**N. of respondents (N=84)**	**Percentage (%)**
Per vaginal bleeding (moderate to severe)	0	0	0	0
Uterine perforation	0	0	0	0
Cost of procedures	**ESK**		**F/C**	**Ratio**

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	(Taka/Case)		(Taka/Case)	F/C:ESK
	1600		12,000	7.5
Duration of procedures(min)	**Mean**	**Standard Deviation**	**Minimum**	**Maximum**
F/C	7.50	1.01	6	10.20
ESK	3.42	0.95	1.45	5.30

*Time duration is the exact time from initiation to the end of each procedure without consideration of time of anesthesia in fractional curettage.

Table VI: There was no major complication in both procedures. The cost per case was 1600 taka and 12,000 taka for ESK and FC procedures respectively. The time duration is less (3.42±0.95 min) in endometrial suction kit method compared to Fractional curettage (7.50±1.01 min).

Discussion

The main reason for performing endometrial biopsy among the respondents of this study was to diagnose the benign pathology of endometrium by ruling out endometrial hyperplasia /endometrial carcinoma, so that the necessary treatment can be planned. This study also assessed the cost and duration of endometrial sample collection both by endometrial suction kit and fractional curettage procedures.

Total eighty-four (84) subjects were included in this study. The mean age of the respondents was 51.92±8.74 years with range from 40-70 years. Postmenopausal women constitute 65.5% (55) and premenopausal women constitute 34.5% (29) of the study population. In this present study, fifty-two (61.9%) respondents were para ≥3 followed by 30(35.7%) para 1-2 and 2(2.4) nullipara.

Regarding the distribution of endometrial pathology by endometrial thickness in this study, it was observed that the mean endometrial thickness was 24.6±6.6 mm, 23.3±-mm, 23.04±8.78 mm, 20.85±10.37 mm, 11.6±5.7mm, 5.4±0.7 mm in endometrial cancer, simple hyperplasia with atypia, simple hyperplasia without atypia, endometrial polyp, normal (proliferative, secretory, atrophic endometrium, chronic endometritis) histology and inadequate tissue group respectively. The difference was statistically significant (p<0.05). So thicker the endometrium is, the more likely the sample will be adequate and as the ET rises chances of getting endometrial carcinoma increases. In another study, the mean endometrial thickness in endometrial carcinoma group was13.8±7.1 mm.[41]

Histopathological reports of the sample obtained by endometrial suction kit in this present series revealed that 11.9% samples were diagnosed as endometrial carcinoma, 10.7% simple hyperplasia without atypia, 1.2% simple hyperplasia with atypia, 7.1% endometrial polyp, 44.1% normal histology (proliferative endometrium, secretory endometrium, atrophic and chronic endometritis) and 25.0% inadequate tissue. Other study, showed the histologic results of tissue obtained by endo sampler of the 85 patients included endometrial carcinoma 3.5%, simple endometrial hyperplasia 1.2%, atypical endometrial hyperplasia1.2%, endometrial polyp 7.1%, proliferative endometrium 48.2%, secretory endometrium 16.4%, atrophic endometrium 1.2%, and inadequate tissue 10.6%.[36]

Similarly, histopathological reports of the sample obtained by Fractional Curettage in this current series, showed that 11.9% respondents had endometrial carcinoma, 10.7% simple endometrial hyperplasia without atypia, 1.2% simple endometrial hyperplasia with atypia, 19% endometrial polyp, 44.1% respondents had normal (proliferative, secretory endometrium, atrophic and chronic endometritis) and 13.1% inadequate tissue. In other study, found 10% endometrial carcinoma, 6.7% proliferative endometrium,3.3% endometrial polyp, 3.3% simple endometrial hyperplasia, 13.4% atrophic endometrium, and 33.3% inadequate tissue with Fractional Curettage procedure.[26] In Moradan and Mir study, only one patient (0.8%) had endometrial carcinoma.[65]

Regarding the rate of detection of endometrial pathologies by two methods in current study observed that endometrial cancer, simple hyperplasia with and without atypia histopathology were precisely same between two methods however, endometrial polyp lesion was less in endometrial suction kit biopsy as well as inadequate tissue was more frequent in this method. The difference was statistically not significant (p>0.05) between two groups. No cases of

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endometrial cancer and endometrial hyperplasia were missed after successful Endometrial suction kit sampling which was similar to study of Choudry and Javaid.[40] In other study, two cases of endometrial carcinoma were missed.[42]

In this study 86.9% (73/84) of the samples obtained by Fractional curettage and 75.0% (63/84) of those obtained by endometrial suction kit were adequate. Adequacy of endometrial sampling by two methods had good agreement. Thus, endometrial suction kit is an effective device in obtaining adequate samples without anesthesia. In other study, 91.76% (78/85) of the samples obtained by Fractional Curettage and 89.41% (76/85) of the samples obtained by Endosampler device were adequate for histopathological examination.[36] The difference was not statistically significant (p = 0.317). In the study by turisk authors the authors reported 100% sufficient sample in conventional D & C and 97.7% in pipelle that is higher by both methods in comparison to this study.[38] It may be due to different instruments, pathologist's experience and inclusion of study respondents between 40-49 years. However, Tanriverdi et al.[67] reported sufficiency rate of 88.1% and 77.1% for D & C and pipelle respectively that is almost similar to this study.

In this present study, it was observed that sensitivity, specificity, accuracy, PPV and NPV of Endometrial suction kit device for the diagnosis of endometrial carcinoma, simple endometrial hyperplasia with atypia, simple endometrial hyperplasia without atypia were 100.0%. In another study, the Pipelle device had 100% sensitivity, 100% specificity and 100% predictive values, also it was 100% accurate for diagnosing endometrial hyperplasia (with or without atypia) and endometrial carcinoma.[38] Study conducted in India showed 98.07% accurate in diagnosing hyperplasia with atypia and 98.0% accurate in diagnosing carcinoma compared to 69.2% and 71.2%, respectively in another study.[28,43] The study conducted by Demirkiran et al had the sensitivity of pipelle biopsy for endometrial hyperplasia without atypia and atypia was 67% and 75% respectively.[39] Specificity for endometrial hyperplasia with atypia was 99.5%. The NPV of pipelle biopsy was 99% for malignancy. NPV should be the most important parameter for mortality and morbidity related pathologies such as malignancy.

In the diagnosis of endometrial polyp, endometrial suction kit device had sensitivity, specificity accuracy, PPV and NPV of 31.3%, 98.8%, 85.7%, 83.3%, 85.9% respectively. The low sensitivity in this study was attributed to inadequate tissue collection by endometrial suction kit biopsy. Researcher of authors also found that the most common histological diagnosis missed with an inadequate endometrial sample was endometrial polyp.[44] With respect to diagnostic tests Kazandi et al. study, observed that sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) of Pipelle biopsies in recognizing endometrial polyps were 12.5%, 100%, 100% and 88.7%, respectively, which is consistent with the present study.[33]

As the Endometrial suction kit does not require cervical dilatation due to its diameter and flexibility, the procedure was well tolerated by the patients. There was no need of anaesthesia or analgesia during Endometrial suction kit procedure in any of the respondents. Only three patients had slight discomfort. In Choudry and Javaid study, 5% of the patients experienced slight discomfort.[40] No other complications like excessive per vaginal bleeding, vasovagal reaction, uterine perforation was noted among the respondents in this present study.

The cost per case was 1600 taka and 12,000 taka for Endometrial suction kit and Fractional curettage procedures respectively. So Endometrial suction kit is eight times more cost-effective than Fractional curettage procedure. The cost included the procedure (Investigations for diagnosis and G/A fitness, histopathological reports), anesthesia, surgery and inpatients charges, which was also supported by other studies.[34] According to another study, the Pipelle was eight times more costly than D&C.[29] Tumrongkunagon and Suknikhom study, stated that Endosampler was six times more cost-effective when compared to Fractional curettage.[36]

The endometrial sampling using Endometrial suction kit could replace the Fractional curettage method of endometrial sampling, because, it is accurate, cost effective outpatient procedure, avoids general anesthesia with high sensitivity and specificity for detection of endometrial hyperplasia and endometrial carcinoma.

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Conclusion

The study clearly demonstrated that the endometrial suction kit is highly sensitive, specific and accurate method in the detection of endometrial hyperplasia and endometrial cancer. No cases of endometrial cancer and endometrial hyperplasia were missed after successful endometrial suction kit sampling. It is also a cost-effective, less time-consuming outpatient procedure. Hence, Endometrial suction kit can be used as an outpatient initial diagnostic procedure in low resource settings for high risk women of endometrial cancer.

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