



## VALIDITY OF PIPELLE ENDOMETRIAL SAMPLING IN COMPARISON WITH CONVENTIONAL DILATATION AND CURETTAGE IN PATIENTS WITH ABNORMAL UTERINE BLEEDING.

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### ABSTRACT

**Background :** Dilatation and curettage (D&C) is the gold standard for endometrial sampling. We compared endometrial sampling by pipelle curette with conventional dilatation and curettage (D&C) in patients with abnormal uterine bleeding. The aim and objectives of the study was to determine the reliability of pipelle device in acquiring an adequate & representative endometrial sample compared to D&C and to compare the result of histopathological diagnosis of pipelle sampling with D&C.

**Materials and Methods:** A cross-sectional study was done at SKIMS Soura, Srinagar, between 11/11/2017 to 10/11/2018. 100 cases of abnormal uterine bleeding (AUB) attending the outpatient clinic in the department of obstetrics & gynecology were included in the study. Endometrial sampling with pipelle device was performed in 100 patients followed by formal D&C.

**Results:** For obtaining the endometrial sample the sensitivity of pipelle sampling was 97% and the specificity was 100% when compared with D&C sampling. The diagnosis made by the HPE report by the sample obtained from pipelle had shown a very high sensitivity, specificity, positive predictive value and negative predictive value, except for the diagnosis of endometrial polyp which the pipelle sample was not able to detect.

**Conclusions:** The endometrial sampling using Pipelle is a safe, accurate, cost effective, outpatient procedure, which avoids general anesthesia and has a high sensitivity and specificity for detection of endometrial hyperplasia and endometrial malignancy.

**KEYWORDS :** Pipelle Endometrial Sampling, D&C, AUB, Biopsy

### INTRODUCTION

Abnormal uterine bleeding (AUB) accounts for more than 70% of all gynaecological consultations in the perimenopausal and postmenopausal year (1). ACOG defined AUB as any bleeding from uterine corpus that is abnormal in regularity, volume, frequency, duration and occurs in absence of pregnancy. FOGSI proposed a classification system for the etiologies of the AUB. With this system, the etiologies of AUB are classified as "related to uterine structural abnormalities" and "unrelated to uterine structural abnormalities" and categorized following the acronym PALMCOEIN: Polyp, Adenomyosis, Leiomyoma, Malignancy and hyperplasia, Coagulopathy, Ovulatory dysfunction, Endometrial, Iatrogenic, and Not otherwise classified(2,3).

Evaluation of the abnormal uterine bleeding in women  $\geq 40$  years or menopausal women is of critical importance to confirm the benign nature of the problem and to exclude endometrial carcinoma, so that medical or conservative treatment can be offered and unnecessary radical surgery can be avoided (4). Dilatation & curettage (D&C) is the gold standard for endometrial sampling, but in 60% of cases, less than half of the uterine cavity is curetted, with the added risk of general anesthesia, infection and perforation (5,6). This has led to the advent of new and simple methods for endometrial sampling. Various devices are in the market nowadays, including the Pipelle device (7,8). The Pipelle can be used on an outpatient basis and is cost effective compared with D&C (9). However, there are still concerns regarding the adequacy of the sample obtained, nonsampling of focal intrauterine lesions (7).

The purpose of this study was to assess and compare the diagnostic accuracy of Pipelle endometrial sampling with conventional D&C in patients with abnormal uterine bleeding.

### METHODS

This cross sectional study was conducted in SKIMS Soura, Srinagar, on 100 patients with abnormal uterine bleeding over 40 years of age after getting clearance from the institutional ethics committee. Detailed clinical assessment of the patients was followed by transvaginal sonography and

laboratory investigations (complete blood count, coagulation profile, prolactin, thyroid and liver function tests). Patients with local gynaecological cause or possibility of pregnancy or history of contraception or endometrial thickness  $< 4$  mm were excluded from the study. Patients included in this study were euthyroid with normal liver function tests, normal activated partial thromboplastin time (APTT) and normal platelet count. The endometrial sampling was performed by the Pipelle device. The Pipelle was introduced without performing cervical dilatation and withdrawn outside the uterus with a rotatory movement to get the sample which was labelled as sample A. The patients were then transferred to the operative theatre for D&C and the obtained sample after D&C was labelled as sample B. Both samples were sent to a pathologist, who was blinded to the methods of sampling for histopathology assessment. The histopathology reports of the Pipelle sample was compared with that of the D&C sample and the D&C report was considered as the gold standard.

### RESULTS:

The basic study characteristics median and range of the study population is reflected in table 1. 100 patients with abnormal uterine bleeding were included in this study, the median age of the studied population was 44.5 years and median age of menarche was 13.5 years, while the median parity was 3.5 and median endometrial thickness was 8 cm.

**Table 1. The characteristics of the studied population**

| Variables                 | median | Range |
|---------------------------|--------|-------|
| Age(years)                | 44.5   | 40-49 |
| Age of menarche (years)   | 13.5   | 12-15 |
| Parity                    | 3.5    | 1-6   |
| Endometrial thickness(mm) | 8      | 6 -12 |

The presenting symptoms of the studied cases were; menorrhagia(n=48), polymenorrhagia (n=24), metrorrhagia or irregular bleeding (n=19) and postmenopausal bleeding (n=9). The sample was labeled as inadequate by the histopathologist when no endometrial tissue was present in the specimen sent. 100% of the samples obtained by D&C, while 97% of the samples obtained by Pipelle device were adequate for histopathological examination.

As depicted in table 2 , The histopathological examination of 100 samples obtained by conventional D&C revealed proliferative endometrium in 40 specimens, secretory endometrium in 34 specimens,disordered endometrium in 9 ,

endometrial hyperplasia in 10 specimens, endometritis in 3 specimens, endometrial polyps in 2 specimens and malignant endometrium in 2 specimens .

**Table 2. The histopathological results of the specimens obtained by Pipelle device and conventional dilatation & curettage (D&C)**

| Histopathological diagnosis            | Histopathological results of the of the specimens obtained by Pipelle | Histopathological results of the of the specimens obtained by device conventional D&C |
|--|---|---|
| Proliferative endometrium              | 40  | 40  |
| Secretory endometrium                  | 33  | 34  |
| Disordered endometrium                 | 10  | 9   |
| Endometrial hyperplasia without atypia | 8   | 8   |
| Endometrial hyperplasia with atypia    | 2   | 2   |
| Endometritis                           | 2   | 3*  |
| Endometrial polyp                      | 0   | 2**   |
| Adenocarcinoma                         | 2   | 2   |

\* One case of endometritis could not be diagnosed by Pipelle sampling, because the tissue sent was inadequate for histopathological examination  
 \*\* Two cases of endometrial polyps could not be diagnosed by Pipelle sampling, because the tissue sent was inadequate for histopathological examination

As is evident In table 3 , in this study the Pipelle device had 100% sensitivity, 100% specificity and 100% positive and negative predictive values for diagnosing proliferative endometrium ,endometrial hyperplasia and endometrial carcinoma. This study also depicted 97.1% sensitivity , 100% specificity,100% positive predictive value and 98.5 % negative

predictive value for diagnosing secretory endometrium , .it had 75% sensitivity, 100% specificity,100% positive predictive value (PPV) and 98 % negative predictive value (NPV) for diagnosing endometritis, while, it had 50% sensitivity, 100% specificity, 100% PPV and 98 % NPV for diagnosing endometrial polyps.

**Table 3. The sensitivity, specificity, positive and negative predictive values of the Pipelle device as compared to conventional dilatation and curettage for diagnosing endometrial histology in patients with abnormal uterine bleeding**

| variables                 | Proliferative endometrium | Secretory Endometrium | Disordered endometrium | Hyperplasia without atypia | Hyperplasia with atypia | Endometritis | polyp | Adenocarcinoma |
|---------------------------|---------------------------|-----------------------|------------------------|----------------------------|-------------------------|--------------|-------|----------------|
| sensitivity               | 100%                      | 97.1%                 | 100%                   | 100%                       | 100%                    | 75%          | 50%   | 100%           |
| specificity               | 100%                      | 100%                  | 91%                    | 100%                       | 100%                    | 100%         | 100%  | 100%           |
| Positive predictive value | 100%                      | 100%                  | 90%                    | 100%                       | 100%                    | 100%         | 100%  | 100%           |
| Negative predictive value | 100%                      | 98.5%                 | 98.9%                  | 100%                       | 100%                    | 98.9%        | 98%   | 100%           |

**DISCUSSION**

Many authors concluded that the Pipelle is an accurate and acceptable outpatient sampling technique when compared with D&C (10,11,12). In this study; the Pipelle device had 97% sensitivity, 100% specificity and 100% predictive values in obtaining the endometrial sample. We also found that the Pipelle device had 100% sensitivity, 100% specificity ,100% predictive values and 100% accuracy for diagnosing proliferative endometrium,endometrial hyperplasia (with or without atypia) and endometrial carcinoma. In the present study incidence of carcinoma endometrium was more common in the 51–60 years age group. The result of this study was almost similar to data mentioned by Escoffery et al in their study(13).

Mechado and colleagues reviewed 1535 reports of endometrial biopsies taken from outpatients using the Cornier Pipelle, in pre- and postmenopausal patients with abnormal vaginal bleeding, to establish the accuracy of endometrial biopsy with the Cornier Pipelle in the diagnosis of endometrial cancer and atypical endometrial hyperplasia. The Cornier Pipelle was 84.2% sensitive, 99.1% specific, 96.9 % accurate, with 94.1% PPV and 93.7% NPV for detection of endometrial carcinoma and atypical hyperplasia and they concluded that endometrial biopsy taken with the Cornier Pipelle is an accurate method for diagnosis of endometrial cancer and its precursor atypical hyperplasia (14).

A meta-analysis to assess the accuracy of endometrial sampling devices in detection of endometrial carcinoma and atypical hyperplasia was done by Dijkhuijen et al(15). They

concluded that the endometrial biopsy with the Pipelle is superior to other endometrial techniques in detection of endometrial carcinoma and atypical hyperplasia in pre- and postmenopausal women.

In the study by Abdelazim et al(16).The pipelle and D & C were compared and the authors reported 100% 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 and colleagues(17). , the sufficiency rates were 91.6% and 98.3% by pipelle and D & C respectively. These are higher sufficient rates than our study. The study by Mousavifar et al(18 ) , reported 94% sufficiency rate for pipelle samples that is more than results of this study. The other studies (Behnamfar et al, Fakhra et al, Bano et al) were also reported better rates for both pipelle and D & C in comparison with our study (9,19,20).

In this study, 3 specimens were reported as inadequate for histopathological evaluation (two of them were diagnosed as endometrial polyps and the other one was diagnosed as endometritis by conventional D&C. In spite of the low sensitivity of the Pipelle device for diagnosing endometritis and endometrial polyps (75% and 50 % respectively), it had a high negative predictive value (98.9% and 98% respectively) and high accuracy (99% & 98 % respectively), also ,Kuruvilla et al(21). found that the most common histological diagnosis missed with an inadequate endometrial sample was endometrial polyp.

The term "disordered proliferative endometrium" has been used in a number of ways and is somewhat difficult to define. It denotes an endometrial appearance that is hyperplastic but without an increase in endometrial volume(22). It also refers to a proliferative phase endometrium that does not seem appropriate for any one time in the menstrual cycle, but is not abnormal enough to be considered hyperplastic. Disordered proliferative pattern resembles a simple hyperplasia, but the process is focal rather than diffuse. A higher incidence of disordered proliferative pattern was found in our study as compared to Cho Nam-Hoon et al(23).

## CONCLUSIONS

Endometrial sampling using Pipelle type device could replace the conventional D&C method because it is an easy and safe method of getting tissue diagnosis, which can be done as an out-patient procedure. Pipelle is cost-effective and has better patient compliance in addition to the added advantage of no anaesthesia or procedure complications like perforation compared to D&C.

Thus it can be considered as a first line investigation for getting an adequate endometrial sample for histology in patients with abnormal uterine bleeding with high sensitivity and specificity even for the detection of hyperplasia and malignancy.

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