



DIAGNOSTIC ACCURACY OF PIPELLE ENDOMETRIAL BIOPSY AS AN OUT PATIENT PROCEDURE IN THE EVALUATION OF WOMEN WITH ABNORMAL UTERINE BLEEDING

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ABSTRACT The incidence of endometrial carcinoma is third amongst genital malignancy next to cervix and ovary in India. Endometrial tissue sampling is done for accurate diagnosis and implementation of optimal treatment strategies. Pipelle endometrial sampler is used for endometrial biopsy as an outpatient procedure in 50 perimenopausal/postmenopausal women with a complaint of abnormal uterine bleeding. The results were compared with findings of dilation and curettage and hysterectomy. The finding of endometrial carcinoma showed sensitivity of 75%, specificity and positive predictive value of 100%, and negative predictive value of 97.87% in Pipelle biopsy. Dilation and curettage showed sensitivity, specificity, positive predictive value and negative predictive value of 100%. Pipelle biopsy is simple, safe and acceptable technique. The overall accuracy in diagnosing endometrial carcinoma is high when adequate specimens are obtained, accuracy is lower in detecting endometrial hyperplasia.

KEYWORDS : Endometrial carcinoma, sampling methods, Dilatation and curettage

INTRODUCTION

Endometrial carcinoma is one of the common malignancies in female genital tract worldwide [1]. Histopathological examination of endometrial tissue remains standard diagnostic procedure for uterine abnormalities, against which the performances of all new diagnostic tools for evaluating the endometrium are compared. The primary indication is in the diagnostic work up of women with abnormal uterine bleeding.

The endometrial sampling was done initially by dilatation and curettage, which requires general anaesthesia and has complications such as perforation and bleeding [2]. Later many less invasive and safe outpatient biopsy devices like Cornier Pipelle were developed[3]. The simple endometrial sampling method Pipelle biopsy is evaluated in this study as an alternative to dilatation and curettage to secure an adequate sample of endometrium, without causing much discomfort to the patients.

MATERIALS AND METHODS

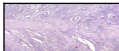

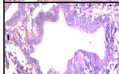
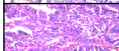
This study has been undertaken in 50 perimenopausal and postmenopausal women aged ≥ 40 years, who attended the outpatient clinic at Institute of social obstetrics and Govt. Kasturba Gandhi Hospital with abnormal uterine bleeding and were admitted for dilatation and curettage, over the period of 3 years. All the patients signed informed consent prior to the procedures and the study protocol confirmed to the ethical guidelines of the Institutional Ethical Committee.

Patients were subjected to Pipelle biopsy as an outpatient procedure and dilatation & curettage was done in operation theatre. The sample obtained fixed in 10% formalin, specimen processed and stained with hematoxylin and eosin for histopathological examination [4], [5]

Hysterectomy was done in patients with suspicious pathology, abnormal findings, malignancy, patients not reliable for follow-up and in patients who themselves opted for surgery, and they are studied on the basis of age group, parity, menopausal status, duration of abnormal uterine bleeding and histopathological diagnosis.

Morphologic interpretation based on systematic examination of gland to stroma ratio, glandular features, stromal features, appearance of vessels, pattern uniformity and cytologic atypia. The predominant pattern was taken into account and classified into. Normal findings (Proliferative phase, Secretory phase and Atrophy), abnormal findings (Disordered proliferative phase, Hyperplasia without atypia, hyperplasia with atypia and Endometrial carcinoma) and Inadequate (insufficient material for interpretation)[6],[7].

Figure 1: Histopathological interpretation

	Proliferative phase-showing straight tubular glands(H&E 100X)
	Secretory phase- early secretory phase with subnuclear vacuoles(H&E 400X)
	Hyperplasia without atypia- Irregular glands lined by pseudostratified columnar epithelial cells, nuclei are oval with uniform contours (H&E 400X)
	Endometrial carcinoma-Moderately differentiated endometrioid adenocarcinoma (H&E 400X)

RESULTS

The results of 50 cases of our study were statistically analyzed on the basis of sensitivity, specificity, positive predictive value, negative predictive value and diagnostic accuracy.

The study population consisted of 38 perimenopausal and 12 postmenopausal women. The age group ranged from 40-80 years and with a mean age of 47 years. The number of viable births (parity) ranged from 0-4 and mean parity is 3. The duration of abnormal uterine bleeding ranged from 1 month to 12 months with mean duration of 4.42 months.

Histopathology in hysterectomy of 50 cases compared with Pipelle biopsy, 38 cases showed results in agreement with hysterectomy. Out of 40 cases diagnosed as normal by hysterectomy, 33 cases were diagnosed the same in Pipelle biopsy, in the remaining 7 cases, one case was reported as disordered proliferative phase and 6 cases were reported as inadequate. In hysterectomy disordered proliferative phase was reported in 4 cases, in which one case correlated with Pipelle biopsy, the remaining 3 cases, proliferative phase was reported in 2 cases and one case was reported as inadequate. Hyperplasia without atypia was reported in 2 cases of hysterectomy of which one case correlated with Pipelle biopsy. The other one was reported as disordered proliferative phase. Endometrial carcinoma was diagnosed in 4 cases of Hysterectomy, of which 3 cases correlated, one case was not diagnosed by Pipelle due to the focal nature of the lesion in the uterus and it was reported as disordered proliferative phase.

The results of histopathology in dilatation and curettage (D & C) and hysterectomy were compared. Out of the 50 cases reported in hysterectomy, 41 cases showed similar results in D & C. The overall percentage of concordance, with respect of hysterectomy was 82%. In which 40 cases reported as normal by HPE in hysterectomy, 34 cases were reported same in D & C, in the remaining 6 cases, Disordered proliferative phase was reported in one case and 5 cases were reported inadequate. Out of the 4 cases reported as disordered proliferative

phase in hysterectomy, 2 cases were in agreement, one case was reported as proliferative phase and the other one as inadequate. In hysterectomy hyperplasia is reported in 2 cases, out of these 2 cases one case was reported the same in D&C, the other one was reported as inadequate. Endometrial carcinoma was reported in 4 cases, all the 4 cases were reported the same in D&C.

The results were statistically analyzed, and sensitivity, specificity, positive predictive value, negative predictive value and diagnostic accuracy were calculated. In our study endometrial carcinoma showed diagnostic accuracy of 98% in Pipelle biopsy and 100% in D&C. Disordered proliferative phase in Pipelle biopsy showed sensitivity of 25%, specificity of 93.48%, positive predictive value of 25%, and Negative predictive value of 93.48%. D&C showed sensitivity of 50%, Specificity of 97.83%, Positive predictive value of 66.67%, Negative predictive value of 95.75%. Pipelle biopsy and D&C showed diagnostic accuracy (DA) of 88% & 94%. Statistical analysis of hyperplasia without atypia in Pipelle biopsy showed Sensitivity 50%, Specificity 100%, Positive predictive value (PPV) 100%, Negative predictive value (NPV) 97.96%. D & C showed 50% sensitivity, 100% specificity, 100% Positive predictive value, 97.96% Negative Predictive Value.

Table 1: Statistical analysis of abnormal findings in Pipelle biopsy

Diagnosis	sensitivity	specificity	PPV	NPV	DA
Disordered proliferative phase	25%	93.48%	25%	93.48%	88%
Hyperplasia without atypia	50%	100%	100%	97.96%	98%
Endometrial carcinoma	75%	100%	100%	97.87%	98%

DISCUSSION

The main objective of endometrial sampling in perimenopausal and post-menopausal patients with abnormal uterine bleeding is detecting premalignant or malignant endometrial disease in the sampled material by histopathological examination. Endometrial pipelle biopsy was introduced by Cornier in 1980s. The efficacy of Pipelle has been studied by many authors and found to be accurate and acceptable as outpatient procedure [8],[9]. The percentage of endometrial surface sampled by the Pipelle device is 4% [10]. There are some limitations to these procedures, such as factors which preclude the passage of the instrument (cervical stenosis and distortion by sub mucous fibroids) or focal lesions may be missed [11].

The results of this comparative study of Pipelle biopsy and D & C with Hysterectomy in women with peri menopausal / post-menopausal bleeding were concordant with various studies conducted in the past.

Abdelazim and colleagues studied diagnostic accuracy of Pipelle endometrial sampling versus conventional dilatation and curettage in patients with abnormal uterine bleeding. Pipelle device showed 100% sensitivity, specificity and diagnostic accuracy for the diagnosis of endometrial hyperplasia and endometrial carcinoma. [12] Machado and colleagues concluded in their study of outpatient endometrial biopsies taken by Pipelle device in pre and postmenopausal patients with abnormal uterine bleeding that Pipelle showed 84.2% sensitivity, 99.1% specificity, accuracy is 96.9%, positive predictive value 94.1% and negative predictive value 93.7%. [13] In our study with Pipelle biopsy sensitivity was 75%, specificity was 100%, positive predictive value 100%, negative predictive value 97.87% and diagnostic accuracy was 98% for endometrial carcinoma. One case was not diagnosed by Pipelle due to focal nature of the lesion.

D&C shows varied sensitivity and specificity in different studies, Ceci et al [14] reported sensitivity of 46%, specificity of 100%. Yaranandi F and colleagues reported in their study of diagnostic accuracy of dilatation and curettage for abnormal uterine bleeding sensitivity of 30.2%, specificity of 72.3%, positive predictive value of 77.1%, negative predictive value of 25.1% and accuracy of 92.1% [15]. In our study D&C showed 100% sensitivity, specificity, positive predictive value, negative predictive value and diagnostic accuracy for endometrial carcinoma.

The percentage of inadequate samples in pipelle biopsy was 8.6% in a study done by Toma Aron and colleagues [11], Goldchmit et al reported 15% inadequate samples [16], and our study shows 14% inadequate samples. In D&C Epstein et al reported 4% [17] and Behnamfar et al reported 7% inadequate samples in [9], our study showed 14% inadequate samples.

In perimenopausal / post-menopausal women inadequate endometrial sampling occurs due to either an underlying atrophic endometrial state or the problems inherent with non-representative sampling. The diagnosis of cancer and hyperplasia are found in about 6% of inadequate specimens and these patients need further investigations [18].

CONCLUSION

Minimally invasive outpatient endometrial sampling procedure Pipelle biopsy is simple, safe and acceptable technique in the evaluation of women with peri/post menopausal bleeding. When adequate specimens are obtained, it has high over all accuracy in diagnosing endometrial cancer. Accuracy is lower in detecting endometrial hyperplasia. Additional endometrial assessment should be under taken, in cases of insufficient material or if symptoms persist.

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