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Research Article

Histological correlation of pipelle endometrial sampling with dilatation and curettage in abnormal uterine bleeding

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ABSTRACT

Background: The current study was aimed to compare histopathological findings of endometrial aspiration biopsy by pipelle with endometrial biopsy obtained by dilatation and curettage.

Methods: 82 women attending to gynaec OPD with complaint of AUB were selected as cases. First pipelle aspiration biopsy was done was before cervical dilatation and followed by D&C. Histopathology report of pipelle sample was compared with D&C sample.

Results: There In the present study, menorrhagia was the most common bleeding pattern 43 (52.4%). In pipelle aspiration biopsy group, endometrial hyperplasia was reported in 42.6% of patients, secretory endometrium in 14.6% of patients, proliferative endometrium in 32.9 % of patients, atrophic endometrium in 6 % of patients and malignancy in 3.6 % of patients. In D&C group, 39 (47.5%) of patients had endometrial hyperplasia followed by proliferative endometrium in 24 (29.3%) of patients, secretory endometrium in 14.6 % of patients, atrophic endometrium in 4.8% of patients and malignancy in 3.6 % of patients. In D&C group, 39 patients had hyperplasia. Among them, 24 patients (61.5%) had simple hyperplasia, 11 patients (28.2%) had complex hyperplasia, 4 patients (10.2%) had atypical hyperplasia. In pipelle aspiration biopsy group, 35 patients had endometrial hyperplasia. Among them, 20 patients (57.1%) had simple hyperplasia, 11 patients (31.4%) had complex hyperplasia, 4 patients (11.4%) had atypical hyperplasia. Out of 82 cases, D & C diagnosed 46 cases as abnormal endometrium and pipelle aspiration diagnosed only 43 as abnormal endometrium. Regarding abnormal endometrium, there was a correlation in pipelle aspiration group and D&C group. Both show substantial agreement between the studies. Pipelle aspiration also has high sensitivity and negative predictive value of 93.47% and 92.3% respectively in diagnosing abnormal endometrium. In 46 patients who had endometrial pathology, pipelle aspiration biopsy diagnosed correctly in 42 patients. 4 cases of hyperplasia were wrongly diagnosed as proliferative endometrium in 3 cases, and in 1 case as atrophic endometrium. Pipelle sampling has diagnosed all cases of malignancy, atrophy and secretory endometrium correctly. Pipelle aspiration also has high sensitivity and negative predictive value of 89.7% and 91.4% respectively in diagnosing hyperplastic endometrium.

Conclusions: Hence pipelle aspiration biopsy is an alternative to traditional D& C in diagnosing endometrial pathology which is safer and quick.

Keywords: Pipelle endometrial sampling, Hyperplasia, Dilatation and curettage, Abnormal uterine bleeding

INTRODUCTION

Abnormal uterine bleeding is one of the most frequent menstrual problems constitute about 15-20% of patients presenting to a gynaec OPD. It includes heavy and or prolonged periods and any form of irregular bleeding per vaginum.¹ Abnormal uterine bleeding is a symptom and not a disease.² These menstrual aberrations occur mostly at the extremes of reproductive life. This proportion rises to 69% when the perimenopausal and postmenopausal age groups are considered.³

AUB may be due to abnormalities of reproductive tract which may be benign (polyp, fibroids, endometriosis, etc.) or malignant or it may be due to infections, pregnancy related complications, iatrogenic factors and systemic diseases. However, in majority of cases there are no underlying structural abnormalities and this is called dysfunctional uterine bleeding.

AUB warrants a thorough evaluation in peri and post-menopausal women in order to rule out, serious pathology like endometrial cancer and its precursors such as complex hyperplasia. Risk of endometrial cancer in postmenopausal women with bleeding is 15%.⁴ So, early diagnosis, improves the prognosis.

Abnormal uterine bleeding can be evaluated by ultrasound, saline infusion sonography, endometrial biopsy, hysteroscopy, etc. Histological examination of endometrial tissue remains the standard diagnostic procedure for abnormal uterine bleeding.

For years, Dilatation and Curettage (D&C) was used for endometrial tissue sampling. But because of the associated surgical risks, expense, postoperative pain, and need for operative anesthesia, other suitable substitutes were evaluated.⁵ To minimize these, a variety of thin, flexible plastic samplers have been evaluated, with comparable histologic findings from tissues obtained by D&C, hysterectomy, or stiff metal curette.⁶ Many different methods have been developed to minimize the need for curettage like vibra aspirator, pipelle aspiration but their diagnostic accuracy is debated.

Hence a procedure which is minimally invasive with better diagnostic accuracy, no risk of complications, well accepted by the patient, which is easy to learn and perform is needed.

METHODS

This is a prospective study conducted at the Government Maternity Hospital, Tirupati from August 2011 to October 2012.

In the present study, 82 women attending to gynaec OPD with complaint of AUB were selected as cases. Patients were selected on the basis of inclusion and exclusion criteria. Detailed history evaluated from them regarding

duration of complaint, menstrual history, drug intake and other associated medical illness. Routine blood investigations and urine analysis were done. After getting written consent from selected patients they were planned for endometrial biopsy by pipelle and D&C as a day care procedure. Both procedures were performed in OT at same time. First pipelle aspiration biopsy was done before cervical dilatation and followed by D&C. Both the samples were sent for histopathology separately. Histopathology report of pipelle sample was compared with D&C sample.

Inclusion criteria

1. All women with abnormal uterine bleeding.
2. No obvious cervical and genital lesions.
3. Not on hormonal therapy.
4. No evidence of any haematological disorder.
5. No contraindications for dilatation & curettage study.

Exclusion criteria

1. Unwilling patients.
2. Suspected pelvic infection.
3. Profusely bleeding patients requiring therapeutic curettage.
4. Women on oral contraceptives.
5. Premalignant and malignant lesions of cervix.
6. Cervical stenosis.
7. Severe medical conditions precluding study - like uncontrolled HTN, DM.
8. Pregnancy and related causes of bleeding PV.

RESULTS

82 women with AUB were included as study group. For all women pipelle sampling followed by D&C done and material sent for histopathological examination.

Table 1: AUB - age distribution.

Age (years)	n/t	%
<35	13	15.8
36-40	24	29.2
41-45	27	32.9
46-50	13	15.8
51-55	5	6

Most of patients in this study were between 41-45 years of age (32.9%).

Table 2: AUB - parity.

Parity	n/t	%
Nulliparous	2/82	2.4
Para 1	8/82	9.7
Para 2	38/82	46.3
Para 3	22/82	26.8
Para 4 and above	12/82	14.6

Highest incidence of abnormal uterine bleeding in our study was among para 2 (46.3%) followed by para 3 (26.8%).

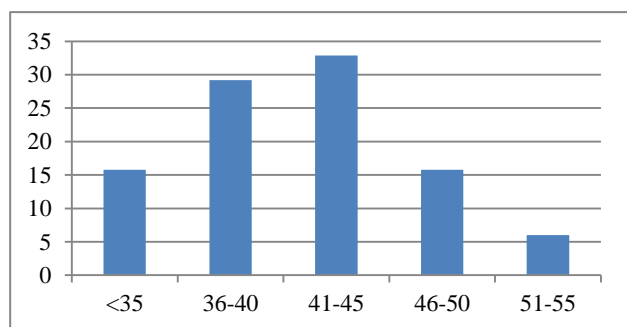


Figure 1: Age distribution.

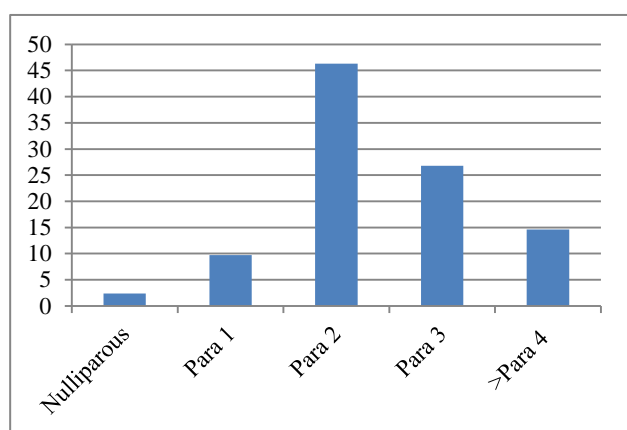


Figure 2: Parity.

Table 3: AUB - bleeding pattern.

Type of bleeding abnormality	n/t	%
Menorrhagia	43/82	52.4
Metrorrhagia	8/82	9.7
Polymenorrhoea	10/82	12.1
Polymenorrhagia	6/82	7.3
Metropathia haemorrhagica	10/82	12.1
Menometrorrhagia	5/82	6.1

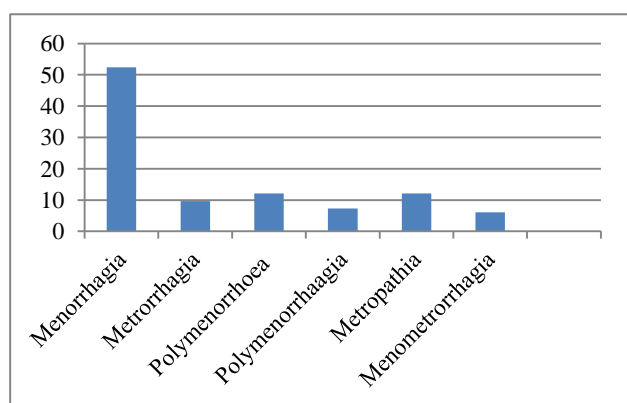


Figure 3: Bleeding pattern.

In the present study, menorrhagia was the most common bleeding pattern 43 (52.4%) followed by metropathia haemorrhagica 10 (12.1%) and polymenorrhoea 10 (12.1%).

Table 4: Histopathology - Pipelle aspiration biopsy.

Histopathology	n/t	%
Secretory endometrium	12/82	14.6
Proliferative endometrium	27/82	32.9
Atrophy	5/82	6
Endometrial hyperplasia	35/82	42.6
Malignancy	3/82	3.6

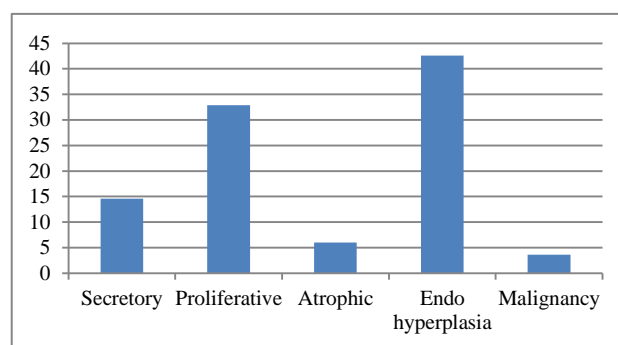


Figure 4: Histopathology - Pipelle aspiration biopsy.

In pipelle aspiration biopsy group, endometrial hyperplasia was reported in 42.6% of patients, secretory endometrium in 14.6% of patients, proliferative endometrium in 32.9% of patients, atrophic endometrium in 6% of patients and malignancy in 3.6% of patients.

Table 5: Histopathology - D&C.

Histopathology	n/t	%
Secretory endometrium	12/82	14.6
Proliferative endometrium	24/82	29.3
Atrophy	4/82	4.8
Endometrial hyperplasia	39/82	47.5
Malignancy	3/82	3.6

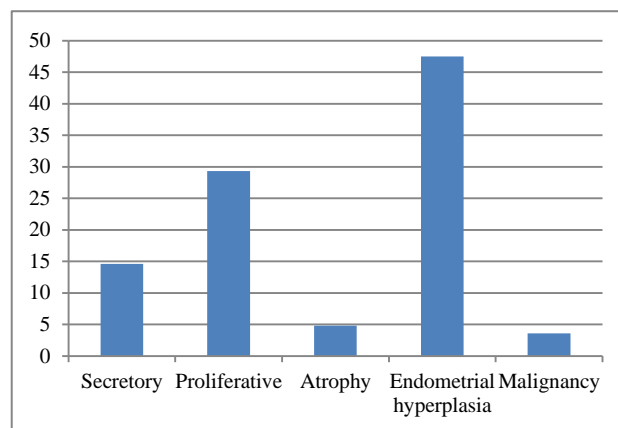


Figure 5: Histopathology - D&C.

In D&C group, 39 (47.5%) of patients had endometrial hyperplasia followed by proliferative endometrium in 24 (29.3%) of patients, secretory endometrium in 14.6 % of patients, atrophic endometrium in 4.8% of patients and malignancy in 3.6 % of patients.

Table 6: Endometrial hyperplasia - D&C.

Endometrial hyperplasia	n/t	%
Simple hyperplasia	24/39	61.5
Complex hyperplasia	11/39	28.2
Atypical hyperplasia	4/39	10.2

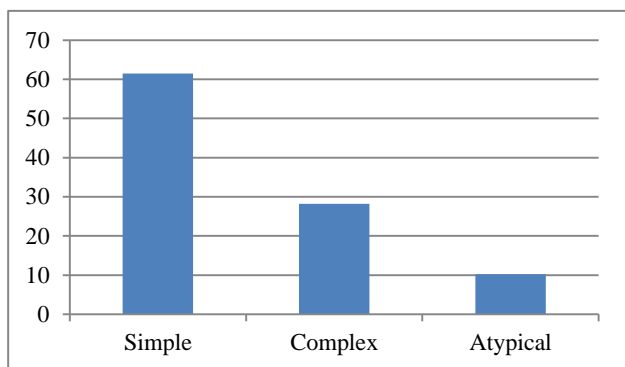


Figure 6: Endometrial hyperplasia - D&C.

In D&C group, 39 patients had hyperplasia. Among them, 24 patients (61.5%) had simple hyperplasia, 11 patients (28.2%) had complex hyperplasia, 4 patients (10.2%) had atypical hyperplasia.

Table 7: Endometrial hyperplasia - Pipelle aspiration biopsy.

Endometrial hyperplasia	n/t	%
Simple hyperplasia	20/35	57.1
Complex hyperplasia	11/35	31.4
Atypical hyperplasia	4/35	11.4

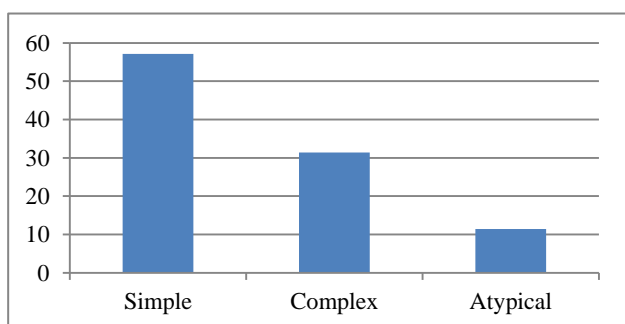


Figure 7: Endometrial hyperplasia - PAS.

In pipelle aspiration biopsy group, 35 patients had endometrial hyperplasia. Among them, 20 patients (57.1%) had simple hyperplasia, 11 patients (31.4%) had complex hyperplasia, 4 patients (11.4%) had atypical hyperplasia.

Table 8: HPE - Pipelle aspiration biopsy group vs. D&C group.

Pipelle aspiration biopsy	D&C biopsy		Total
	Abnormal	Normal	
Abnormal	43(a)	0(b)	43
Normal	3(c)	36(d)	39
Total	46	36	82

Out of 82 cases, D & C diagnosed 46 cases as abnormal endometrium and pipelle aspiration diagnosed only 43 as abnormal endometrium.

Sensitivity = $a/a+c$ $100 = 43/43+3$ $100 = 93.47\%$

Specificity = $d/b+d$ $100 = 36/0+36$ $100 = 100\%$

PPV = $a/a+b$ $100 = 43/43+0$ $100 = 100\%$

NPV = $d/c+d$ $100 = 36/3+36$ $100 = 92.3\%$

Accuracy of concordance = $(a+d)/n$ $100 = 43+36/82$ $100 = 96.3\%$

Kappa statistics = 0.92 very good agreement.

Regarding abnormal endometrium, there was a correlation in pipelle aspiration group and D&C group. Both show substantial agreement between the studies. pipelle aspiration also has high sensitivity and negative predictive value of 93.47% and 92.3% respectively in diagnosing abnormal endometrium.

Table 9: HPE - Pipelle aspiration biopsy vs. D&C group.

Types of endometrial pathology	Aspiration biopsy findings	D&C reports
Secretory endometrium	12	12
Proliferative endometrium	27	24
Atrophy	5	4
Hyperplasia	35	39
Malignancy	3	3
Total	82	82

In 46 patients who had endometrial pathology, pipelle aspiration biopsy diagnosed correctly in 42 patients. 4 cases of hyperplasia were wrongly diagnosed as proliferative endometrium in 3 cases, and in 1 case as atrophic endometrium. Pipelle sampling has diagnosed all cases of malignancy, atrophy and secretory endometrium correctly.

In D&C group, endometrial pathology was diagnosed correctly in all cases.

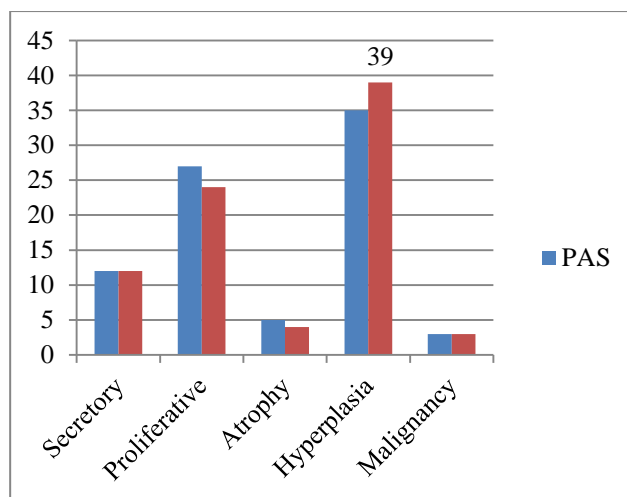


Figure 9: HPE - Pipelle aspiration biopsy vs. D&C group.

Table 10: Endometrial hyperplasia: Pipelle aspiration vs. D&C.

Procedure	n/t	%
D&C group	39/39	100
Pipelle aspiration group	35/39	89.74

Out of 39 cases of hyperplasia pipelle sampling correctly diagnosed 35 cases.

Sensitivity = $a/a+c$ $100 = 35/35+4$ $100 = 89.7\%$

Specificity = $d/b+d$ $100 = 43/0+43$ $100 = 100\%$

PPV = $a/a+b$ $100 = 35/35+0$ $100 = 100\%$

NPV = $d/c+d$ $100 = 43/4+43$ $100 = 91.4\%$

Accuracy of concordance = $(a+d)/n$ $100 = 35+43/82$ $100 = 95.1\%$

Kappa statistics = 0.9 very good agreement.

Pipelle aspiration also has high sensitivity and negative predictive value of 89.7% and 91.4% respectively in diagnosing hyperplastic endometrium.

Table 11: Malignancy - Pipelle aspiration vs. D&C.

Procedure	n/t	%
Pipelle aspiration group	3/3	100
D&C group	3/3	100

Both pipelle and D&C diagnosed all cases of malignancy.

Sensitivity = $a/a+c$ $100 = 3/3+0$ $100 = 100\%$

Specificity = $d/b+d$ $100 = 79/0+79$ $100 = 100\%$

PPV = $a/a+b$ $100 = 3/3+0$ $100 = 100\%$

NPV = $d/c+d$ $100 = 79/0+79$ $100 = 100\%$

Accuracy of concordance = $(a+d)/n$ $100 = 3+79/82$ $100 = 100\%$

Kappa statistics = 1 very good agreement.

Pipelle aspiration also has high sensitivity and negative predictive value of 100% and 100% respectively in diagnosing malignancy of endometrium.

DISCUSSION

Histological diagnosis of endometrial tissue is important especially in perimenopausal women with AUB to confirm the benign nature of the problem and to rule out endometrial carcinoma so that medical treatment or conservative surgery can be offered and unnecessary radical surgeries can be avoided.

In the present study group of 82 patients, endometrial aspiration biopsy with pipelle and dilatation and curettage was done. In the present study, 49% of the patients were 41-50 years which is close to study done by Fouzia Yasmin et al.⁷ and S. Vaidya et al.⁸

In the present study, 88% of patients were multipara which is not correlating with any of the studies.

In the present study, 52% of patients presented with menorrhagia and metrorrhagia in 9.7% of patients which is close to study done by Bhavani et al.⁹ i.e.; 54% and 6.5% respectively. polymenorrhoea and polymenorrhagia together constituted 19.4% which is close to the study done by Avantika Gupta et al.¹⁰ (20%).

In the present study group of 82 patients, secretory and proliferative type of endometrium is seen in 47% of patients which is close to study done by Gerald Dafe Forae et al.¹¹ (42.4%), endometrial hyperplasia was seen in 42.6% of patients which is close to the study done by Supriya Sandeepa et al.¹² (38%) and endometrial carcinoma was noted in 3% which is correlating with the study by Avantika Gupta et al.¹⁰ (3%).

In pipelle aspiration biopsy group, out of 4 cases of simple endometrial hyperplasia were diagnosed as proliferative endometrium in 3 and atrophic endometrium in 1 case. The pipelle aspiration biopsy has sensitivity of 89.7%, specificity 100%, PPV 100%, NPV 91.4% which is correlating to the study done by Fouzia Yasmin et al.⁷ which is 100%, 84% and 100% respectively and the accuracy rate was 95% in both the studies.

In the present study, pipelle aspiration biopsy was 100% sensitivity, specificity, positive predictive and negative predictive value in diagnosing endometrial carcinoma which is correlating with study done by Nadia Khurshid et al.¹³ (100%).

CONCLUSIONS

For the purpose of maintaining synchronicity in the timing of sample, the pipelle method was performed at the time of D&C in our study. But otherwise pipelle is an outpatient procedure that can be performed without anaesthesia, analgesia, premedication and cervical dilatation that can be done at the same time of pelvic examination. Hence pipelle aspiration biopsy is an alternative to traditional D& C in diagnosing endometrial pathology which is safer and quick.

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Conflict of interest: None declared

Ethical approval: The study was approved by the institutional ethics committee

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