Content available at: https://www.ipinnovative.com/open-access-journals

Indian Journal of Pathology and Oncology

Journal homepage: www.ijpo.co.in

Original Research Article

A study of endometrial biopsies with clinico-radiological and histopathological correlates at a tertiary care center

Bimal Patel[1]*, Jaydip Gorani[1]

[1]Dept. of Pathology, Gujarat Adani Institute of Medical Sciences, Bhuj, Gujarat, India

Abstract

Background: Endometrial biopsies are important gynaecological diagnostic tool which helps understand endometrial pathology, particularly in the context of menorrhagia and abnormal uterine bleeding (AUB).
Aim and Objectives: To study and correlate endometrial biopsies with clinical presentations, age distribution, endometrial thickness, hormone use and histopathological findings.
Results: A cohort of 305 patients underwent endometrial biopsies for various gynaecological symptoms, of which menorrhagia was the most common, followed by perimenopausal and postmenopausal bleeding. Endometrial thickness on ultrasound was 4mm (median) in functional endometrial changes, while >6mm in endometrial hyperplasia, polyps and carcinoma. On histopathology, functional endometrial change (proliferative/secretory) was the most common findings among the different age groups, disordered proliferation of endometrium (DPE) in 9.8% cases, endometrial hyperplasia in 12.02% cases and carcinoma in 1.96% cases. Pregnancy related changes were noted in 2.28% cases.
Conclusion: Endometrial biopsies are simple, cost effective procedure and provide valuable information in understanding endometrial pathology for better management of patients.

Keywords: Menorrhagia, Abnormal uterine bleeding, Endometrial thickness, Functional endometrial changes, Hyperplasia, Carcinoma.

Received: 13-08-2025; **Accepted:** 07-10-2025; **Available Online**: 17-10-2025

1. Introduction

Endometrium during reproductive phase undergoes constant change in a cyclical manner as a response to hormone. These changes and deviation from the cyclical phases can be studied through endometrial biopsies, which can be obtained by a simple cost effective procedure both in out-patients and inpatients.[1] The endometrial biopsies are usually performed evaluation of infertility/preparation for in vitro fertilization, evaluation of AUB (postmenopausal or during the reproductive years).[2] The American College of Obstetricians and Gynecologists recommends endometrial tissue sampling as first line procedure in the management of AUB in women over 45 years.[3] In 2011, the International Federation of Gynaecology and Obstetrics (FIGO) proposed PALM-COEIN for the etiology of AUB. PALM accounts for structural features (polyps, adenomyosis, leiomyoma, and malignancy) and COEIN addresses non-structural causes (coagulation defects, ovulatory dysfunction, endometrial causes, iatrogenic causes, and non-classified ones).[4] The reporting pathologist should be provided with information like age, clinical history, menstrual cycle and drug history (use of exogenous hormones), ultrasound findings including the endometrial thickness, as these are critical for the interpretation of an endometrial sample.[3] A wide spectrum of histopathological conditions of endometrium such as functional changes of endometrium, pregnancy related condition, inflammatory conditions, endometrial hyperplasia, benign and malignant lesions can be diagnosed on endometrial biopsy.[4] The objective of this study is to evaluate

*Corresponding author: Bimal Patel
Email: bimaldoctor@gmail.com

https://doi.org/10.18231/j.ijpo.12851.1760415476

the spectrum of pathologies and their frequencies in the endometrial biopsies in among three different age groups i.e. reproductive/premenopausal, perimenopausal and postmenopausal. The present study explores the common causes of AUB in different age groups.

2. Materials and Methods

This retrospective analysis was carried out based on the histopathology of endometrial biopsy samples received in the Department of Pathology, in Gujarat Adani Institutes of Medical Sciences, Bhuj, Kutch, Gujarat, over a period of two years (January 2021 to December 2022). The request forms contained the demographic data of patients, clinical summaries and clinical diagnosis. All slides examined were 3–5-µm-thick sections made from 10% formalin-preserved tissue, processed according to standard protocols and embedded in paraffin wax. The stains employed in all cases were of hematoxylin and eosin. The neoplastic lesions were classified according to the 2014 World Health Organization classification of endometrial neoplasms.

3. Results

Three hundred and five (305) endometrial tissue samples were analyzed during the study period. The age range of patients was 21-80 years. For better understanding, age wise group distribution into pre-menopausal (<40 years), peri-menopausal (40-50 years) and post-menopausal (>50 years) was done (**Table 1**). The age range 40-50 years (peri-menopausal) was overall the most common (44.59%) age group subjected to endometrial sampling in the present study.

The clinical indications for endometrial sampling are shown in the **Table 2**. Menorrhagia was the commonest indication, seen in 66.6% (n=200) cases, followed by postmenopausal bleeding (n= 33, 10.81%), perimenopausal bleeding (n=30, 9.8%), bleeding per vagina (n=18, 5.9%), infertility (n=14, 4.59%), bleeding per vegina with undiagnosed pregnancy (n=6, 1.96%) and dysmenorrhea (n=4, 1.31%).

Table 3 shows histopathological diagnosis of endometrial biopsies according to age group distribution. Functional changes were the most common histopathological diagnostic category, accounting for 52.4% (n=160) cases. The mean age of these patients was 38.20 years. The proliferative phase of endometrium (n=87, 28.5%) was the most common morphologic entity under this category, which were mainly seen in pre and peri menopausal age groups. Others in the functional changes of endometrium included secretory endometrium (n=52, 17%) seen mostly in perimenopausal women, followed by Late proliferative early secretory (LPES) phase endometrium in 6.2% (n=19) cases mainly in premenopausal group and inactive endometrium in 0.65% (n=2) cases.

Table 1: Age group distribution of endometrial biopsies

Age in years	Age category	Frequency (N=305)	100%
<40 years	Pre-menopausal	128	41.96%
40-50 years	Peri-menopausal	136	44.59%
>50 years	Post-Menopausal	41	13.44%

Table 2: Clinical history/indication for endometrial biopsies

Clinical history	Frequency	%
m= menorrhagia	200	65.57
d= dysmenorrhea	4	1.31
BPV=bleeding PV	18	5.9
PeMB=Perimenopausal bleeding	30	9.8
PMB=postmenopausal bleeding	33	10.81
In=infertility	14	4.59
BPV + undiagnosed pregnancy	6	1.96

Around 25% of women had abnormal uterine bleeding. Under this category disordered proliferation of endometrium (DPE) was seen in 9.8% (n=30) cases, hormonal changes in 4.5% (n=14) cases, atrophic changes in 3.93% (n=12) cases and inadequate luteal phase (ILP) in 6.55% (n=20) cases.

Endometrial hyperplasia was the diagnosis in 37 (12.02%) cases. Under this category, 31 (10.06%) cases showed hyperplasia without atypia and 6 (1.96%) showed hyperplasia with atypia. Among the latter category 5 patients were in post menopausal age group.

Benign endometrial tumors constituted 13 (4.28%) cases of all histological diagnosis in the present study. Majority of these were endometrial polyps {12 (3.96%) cases}. 6 cases of endometrial polyp were seen in peri menopausal age, 3 cases each in pre-menopausal and post-menopausal age group. Only 1 case of gestational trophoblastic diseases was seen comprising of incomplete hydatidiform mole in premenopausal age.

Pregnancy related conditions were seen in 7 (2.28%) cases (mean age- 29 years), of which 6 were retained product of conception (1.96%) and one was Arias Stella reaction (0.32%). Endometrial carcinoma was seen in 6 (1.96%) cases. 84% (5/6 cases) of which were seen in post menopausal women, with a mean age of 65 years. All these cases were endometrioid carcinoma type on histopathology.

Inflammatory conditions involving the endometrium were diagnosed in 4 (1.31%) cases. All 4 cases showed acute inflammation. Chronic inflammation and granulomatous inflammation were not seen in the present study.

Table 3: Histopathological diagnosis of endometrial biopsies according to age group distribution

Functional changes (52.43%)	**Pre-menopausal**	**Peri-menopausal**	**Post-menopausal**	**Total**	
Proliferative	49	38	0	87	28.52%
Secretory	20	32	0	52	17.04%
LPES	14	5	0	19	6.22%
Inactive	0	1	1	2	0.65%
AUB (24.78%)					
DPE	6	22	4	30	10.4%
Exogenous hormonal changes	9	4	1	14	4.5%
Atrophic	0	0	12	12	3.93%
ILP	8	12	0	20	6.55%
Pregnancy related conditions (2.28%)					
POC	5	1	0	6	1.96%
Arias Stella reaction	1	0	0	1	0.32%
Inflammatory conditions (1.31%)					
acute inflammation	2	0	2	4	1.31%
Endometrial hyperplasia (12.02%)					
Without atypia	9	17	5	31	10.06%
With atypial	1	0	5	6	1.96%
Benign tumours (4.28%)					
Endometrial polyp	3	6	3	12	3.96%
Incomplete mole	1	0	0	1	0.32%
Malignant (1.96%)					
carcinoma	0	1	5	6	1.96%

Table 4 shows the range of endometrial thickness in relation with various histopathological diagnoses. In atrophic endometrium the median of endometrial thickness by transvaginal sonography (TVS) was just 2 mm. In endometrial hyperplasia and polyp thickness of endometrium was 8 mm and 10 mm respectively which was higher than dating endometrium. In endometrial carcinoma the median of endometrial thickness was more than 4-5 mm.

Table 4: Range of endometrial thickness in relation with histopathological diagnosis

Histopathological diagnosis	**Endometrial Thickness (mm)**		
	Max	Min	Median
Proliferative	7	3	5
Secretory	8	4	4
Atrophic	4	2	2
Endometrial polyp	14	4	10
Endometrial hyperplasia	11	3	8
Carcinoma	14	8	6

4. Discussion

Endometrial diseases mainly present with bleeding causing morbidity and mortality in females of all age groups in both developing and developed nations.[1] Endometrial biopsy provides a cost effective, sensitive and specific mode for diagnosis of endometrial diseases and hence proper management of endometrial diseases. The sensitivity of endometrial biopsy for detection of endometrial abnormalities is very high.[2] Endometrial cancer, the most frequent gynaecologic malignancy in the developing world, which develops through preliminary stages of endometrial hyperplasia, can be very well picked up even in small endometrial biopsies. Thus, correct diagnosis whether benign, premalignant and malignant, help the gynaecologist to decide appropriate therapeutic strategy.

Alshdaifat EH et al in a study including 3233 patients over 5 years duration, had a age ranged from 19 years to 86 years with a median of 41 years.[5] Sanjita et al in a study comprising of 82 patients, had age range of 31-60 years.[6] In studies by Singh et al.,[4] Doraiswami et al[10] and Sharma et al,[11] the age group which underwent endometrial biopsies was 40-50 years, similar to that in the present study.

In study by Alshdaifat EH et al, normal cyclical pattern of endometrium was seen in the majority of patients (57.7%) including proliferative endometrium (n=1066, 57.1%), and secretory endometrium (n=801, 42.9%).[5] Pregnancy related AUB was the second most common finding with histopathology revealing products of conception in 98.9% patients, molar pregnancy 0.9% (partial mole-0.5% and complete mole- 0.4%) while one patient had Arias Stella reaction. Atrophic endometrium was noted in only 19

patients, predominant in post menopausal age group. Functional endometrial patterns were most common findings among the reproductive (18-39 years), premenopausal (40-49 years) and postmenospausal age groups (50 years and above). Inflammatory endometrium (acute, chronic and Tuberculosis) was seen 17 patients, 24 patients and 7 patients respectively among the three age groups. Endometrial hyperplasia was seen 6 patients, 4 patients and 17 patients respectively among the age groups. Although benign endometrial polyps (n-453) were seen in all the age groups but predominated among the pre- and post- menopausal age groups. Malignant lesions (n-55) were most common in post menopausal age group (n-48), while only 2 and 5 cases respectively in reproductive and premenopausal age groups. Distribution of malignant lesion was endometrioid adenocarcinoma (42 cases), serous carcinoma (7 cases), mixed mullerian tumour (5 cases) and endometrial stromal neoplasm (1 case). Pregnancy related lesions were most common in reproductive age group followed by premenopausal and only 2 cases in post menopausal age group. Inactive endometrium (n-60) was seen in 4 patients, 23 patients and 33 patients respectively among the age groups.

Sanjita et al in their study had functional endometrial pattern (secretory 24 cases and proliferative 21 cases) was the predominant lesions, while endometrial hyperplasia was seen in 14 cases and endometrial polyp in 2 cases.[6] There was no malignant lesion in their study.

Ranjan S et al in a study of 100 cases had 72% with functional endometrial patterns and rest with organic lesions.[7] Among the latter, endometrial hyperplasia was the noted in 22 cases, while disordered proliferation in 3 cases, chronic endometritis in 2 cases and malignancy in 1 patient.

Vijayaraghavan et al[8] in a study of 160 patients with AUB, the functional endometrial pattern (proliferative phase) was the commonest, followed by endometrial hyperplasia (26.3%), disordered proliferative endometrium in 7% cases, benign endometrial polyp (4%), chronic endometritis (1.9%), endometrial carcinoma (1.2%) and granulomatous endometritis, Arias Stella reaction and atrophic endometrium each less than 1%. Endometrial polyp and endometrial hyperplasia was seen in all age groups, however the predominance was noted in perimenopausal age group.

Desai K et al observed most common in proliferative than in secretory accounting for 29% and 20% respectively.[9] The cohort in the present study had the functional endometrial patterns constituted the most common findings in microscopy which is similar to that reported in literature among all the three age groups. Endometrial hyperplasia was the second most common finding in histopathology which is similar to that seen in studies by Sanjita et al,[6] Ranjan S et al[7] and Vijayaraghavan et al,[8] but pregnancy related lesions were second most common in Alshdaifat EH et al[5] study cohort. Malignant cases in present study were 6, while Alshdaifat EH et al[5] had 55 malignant cases, Ranjan S et al[7] had 1 case and Vijayaraghavan et al[8] had 2 cases, however Sanjita et al[6] had no malignant lesion in their study.

5. Conclusion

Endometrial biopsies are simple and cost effective interventional procedure providing sample for histopathological examination and management of patients with abnormal uterine bleeding. Although functional endometrial patterns are most common, endometrial biopsy procedure with histopathological examination can help patients with early diagnosis of endometrial hyperplasia and endometrial carcinoma.

6. Source of Funding

None.

7. Conflict of Interest

Nil.

References

1. Maybin JA, Critchley HOD. Menstrual physiology: implications for endometrial pathology and beyond. *Hum Reprod Update*. 2015;21(6):748–61. https://doi.org/10.1093/humupd/dmv038.
2. Vitale SG, Buzzaccarini G, Riemma G, Pacheco LA, Di Spiezio Sardo A, Carugno J, et al. Endometrial biopsy: Indications, techniques and recommendations. An evidence-based guideline for clinical practice. *J Gynecol Obstet Hum Reprod*. 2023;52(6):102588. https://doi.org/10.1016/j.jogoh.2023.102588.
3. ACOG Committee Opinion No. 557: Management of acute abnormal uterine bleeding in nonpregnant reproductive-aged women. *Obstet Gynecol*. 2013;121(4):891–6. https://doi.org/10.1097/01.AOG.0000428646.67925.9a.
4. Mishra D, Sultan S. FIGO's PALM-COEIN Classification of Abnormal Uterine Bleeding: A Clinico-histopathological Correlation in Indian Setting. *J Obstet Gynaecol India*. 2017;67(2):119–25. https://doi.org/10.1007/s13224-016-0925-8.
5. Alshdaifat EH, Al-Horani SSE, Al-Sous MM, Sharaf Al-Horani, Sahawneh FE, Sindiani AM. Histopathological pattern of endometrial biopsies in patients with abnormal uterine bleeding in a tertiary referral hospital in Jordan. *Ann Saudi Med*. 2022;42(3):204–13. https://doi.org/10.5144/0256-4947.2022.204.
6. Sanjita, Khanam I. Study of histopathological findings of endometrial biopsy in women with abnormal uterine bleeding. *Int J Reprod Contracept Obstet Gynecol*. 2023;12(5):1435–7. https://doi.org/10.18203/2320-1770.ijrcog20231237.
7. Ranjan S, Kumar H, Gore C, Chandanwale S, Bhide A, Desai A. Histopathological pattern of endometrial biopsies in patients with abnormal uterine bleeding. *Med J DY Patil Vidyapeeth*. 2023;16:599–604.
8. Vijayaraghavan AS, Jadhav C, Pradeep B, Bindu H, Kumaran S. A Histopathological Study of Endometrial Biopsy Samples in Abnormal Uterine Bleeding. *Cureus*. 2022;14(11):e31264. https://doi.org/10.7759/cureus.31264.
9. Desai K, Patole K, Kathaley M. Endometrial evaluation by histopathology in abnormal uterine bleeding in perimenopausal and postmenopausal patients. MVP J Med Sci. 2014:75-9.
10. Doraiswami S, Johnson T, Rao S, Rajkumar A, Vijayaraghavan J, Panicker VK. Study of endometrial pathology in abnormal uterine bleeding. *J Obstet Gynaecol India*. 2011;61(4):426–30. https://doi.org/10.1007/s13224-011-0047-2.

11. Sharma R, Mishra P, Kumar N, Srivastava P. Histomorphological spectrum of endometrial lesion in women presenting with abnormal uterine bleeding: a 3-year study at a tertiary care center. *Trop J Pathol Microbiol*. 2018;4(7):525–31. https://doi.org/10.17511/jopm.2018.i07.08.

Cite this article: Patel B, Gorani J. A study of endometrial biopsies with clinico-radiological and histopathological correlates at a tertiary care center. *Indian J Pathol Oncol*. 2025;12(3):253–257.