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STUDY OF CLINICAL PATTERNS AND ENDOMETRIAL HISTOPATHOLOGY IN ABNORMAL UTERINE BLEEDING

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ABSTRACT Abnormal uterine bleeding (AUB) is one of the most common gynecological complaints affecting women of reproductive, perimenopausal, and postmenopausal age groups. The etiological spectrum of AUB ranges from functional hormonal disturbances to structural and malignant uterine pathology. Histopathological evaluation of endometrial tissue plays a crucial role in identifying the underlying cause and guiding appropriate management. The present study was conducted to evaluate the clinical patterns and histopathological spectrum of abnormal uterine bleeding at a tertiary care hospital. This prospective observational study was conducted in the Department of Obstetrics and Gynecology at Shri Bhausaheb Hire Government Medical College, Dhule, Maharashtra, India, from January 2024 to December 2024. A total of 135 women with abnormal uterine bleeding underwent dilatation and curettage (D&C) or endometrial sampling for histopathological evaluation. The majority of women belonged to the 41–50 years age group (42.96%) and were multiparous (71.11%). Heavy menstrual bleeding was the most common presenting complaint observed in 45.93% patients. According to the PALM-COEIN classification, leiomyoma was the most common clinical category (28.15%). Histopathological examination of D&C specimens revealed proliferative endometrium as the most common finding (34.07%), followed by secretory endometrium (22.96%) and disordered proliferative endometrium (12.59%). Endometrial hyperplasia was identified in 13.33% cases, while endometrial carcinoma was observed in 2.96% patients. Among uterine specimens, leiomyoma (40.28%) and adenomyosis (25.00%) were the predominant histopathological findings. Endometrial sampling and histopathological examination remain essential for accurate diagnosis, clinicopathological correlation, and exclusion of premalignant and malignant lesions.

KEYWORDS : Abnormal Uterine Bleeding; Endometrial Histopathology; PALM-COEIN; Dilatation And Curettage; Endometrial Hyperplasia; Leiomyoma; Adenomyosis

INTRODUCTION

Abnormal uterine bleeding (AUB) is one of the most common gynecological complaints encountered in women of reproductive, perimenopausal, and postmenopausal age groups and constitutes a major proportion of gynecology outpatient visits. It significantly affects physical health, quality of life, psychological well-being, and socioeconomic productivity. The etiological spectrum of AUB is broad and includes both structural and non-structural causes.[1,2] Recent Indian studies have emphasized the continuing burden of AUB in tertiary care practice and the importance of systematic evaluation for accurate diagnosis and management.[3,4,5]

The clinical presentation of AUB varies from heavy menstrual bleeding and intermenstrual bleeding to postmenopausal bleeding, and the underlying endometrial pathology may range from normal cyclical endometrium to premalignant and malignant lesions. Histopathological examination of endometrial tissue obtained by dilatation and curettage (D&C), endometrial biopsy, or hysterectomy specimen evaluation remains the gold standard for identifying the underlying pathology and excluding endometrial hyperplasia or carcinoma.[6,7,8]

Several Indian studies have reported proliferative endometrium, secretory endometrium, disordered proliferative endometrium, endometrial hyperplasia, and malignancy as important histopathological patterns in women presenting with AUB.[9,10,11] Histopathological correlation is particularly important in perimenopausal and postmenopausal women where the risk of premalignant and malignant lesions is higher.[12,13] Present study was undertaken to evaluate the clinical patterns and histopathological spectrum of abnormal uterine bleeding in women undergoing endometrial sampling and uterine specimen evaluation at a tertiary care teaching hospital in Maharashtra.

MATERIAL AND METHODS

The present prospective observational study was conducted in the Department of Obstetrics and Gynecology at Shri Bhausaheb Hire Government Medical College and affiliated tertiary care hospital, Dhule, Maharashtra, India, from January 2024 to December 2024. The study was undertaken to evaluate the clinical patterns and histopathological spectrum of abnormal uterine bleeding (AUB) in women presenting to the tertiary care center.

Inclusion Criteria

- Women presenting with abnormal uterine bleeding in reproductive, perimenopausal, or postmenopausal age group
- Patients undergoing dilatation and curettage (D&C) or endometrial sampling for evaluation of abnormal uterine bleeding
- Patients undergoing hysterectomy for abnormal uterine bleeding and related gynecological conditions with availability of uterine specimens for histopathological examination
- Women willing to participate in the study and provide written informed consent
- Patients with complete clinical and histopathological records

Exclusion Criteria

- Pregnancy-related bleeding disorders including abortion, ectopic pregnancy, and gestational trophoblastic disease
- Patients with bleeding due to cervical pathology such as cervical carcinoma or cervical polyp
- Women with known coagulation disorders or bleeding diathesis
- Patients with acute pelvic inflammatory disease or genital tract infection
- Women receiving hormonal therapy affecting endometrial histology at the time of evaluation
- Inadequate or insufficient endometrial tissue sample for histopathological assessment
- Patients with incomplete clinical or histopathological data

Institutional Ethics Committee approval was obtained before commencement of the study. Written informed consent was obtained from all participating patients prior to inclusion in the study and before performing any invasive procedure.

A detailed clinical history including age, parity, menstrual complaints, duration and pattern of bleeding, associated symptoms, menopausal status, medical comorbidities, and drug history was recorded. General physical examination, abdominal examination, and pelvic examination were performed in all patients. Baseline investigations including complete blood count, urine examination, blood sugar levels, thyroid profile, coagulation profile, pelvic ultrasonography, and other relevant investigations were performed wherever indicated. Cases were clinically categorized according to the FIGO PALM-COEIN classification system for abnormal uterine bleeding.

Endometrial sampling was performed under aseptic precautions using dilatation and curettage technique according to standard departmental protocol. The obtained endometrial tissue samples were fixed in 10% formalin and sent for histopathological examination. In patients undergoing hysterectomy, uterine specimens were examined grossly

for endometrial thickness, myometrial pathology, adenomyosis, leiomyoma, endometrial polyps, and other abnormalities before histopathological processing.

Histopathological examination was carried out in the Department of Pathology using routine paraffin embedding and hematoxylin and eosin staining techniques. Endometrial patterns such as proliferative endometrium, secretory endometrium, disordered proliferative endometrium, endometrial hyperplasia, endometritis, atrophic endometrium, and malignant lesions were documented. Histopathological findings from D&C samples and hysterectomy specimens were analyzed separately to maintain denominator consistency.

The primary outcome variables studied included clinical bleeding patterns and histopathological spectrum of endometrial lesions in abnormal uterine bleeding. Secondary outcome variables included correlation between clinical diagnosis and histopathological findings, frequency of structural lesions, and incidence of premalignant or malignant pathology.

Data were entered into Microsoft Excel and analyzed using Statistical Package for the Social Sciences (SPSS) software version 26.0. Categorical variables were expressed as frequencies and percentages, while continuous variables were presented as mean ± standard deviation wherever applicable. Chi-square test or Fisher's exact test was applied for comparison of categorical variables. A p-value of less than 0.05 was considered statistically significant.

RESULTS

During the study period from January 2024 to December 2024, a total of 135 women with abnormal uterine bleeding underwent dilatation and curettage (D&C) or endometrial sampling for histopathological evaluation. In addition, 72 uterine specimens obtained following hysterectomy for abnormal uterine bleeding and related gynecological conditions were evaluated separately for histopathological correlation.

The majority of women undergoing D&C belonged to the 41–50 years age group accounting for 58 patients (42.96%), followed by 31–40 years age group comprising 39 patients (28.89%). Multiparous women constituted 96 cases (71.11%).

Table 1: Age Distribution and Parity Among Patients Undergoing D&C/Endometrial Sampling (n=135)

Variable	Frequency	Percentage (%)
Age Distribution		
≤30 years	18	13.33
31–40 years	39	28.89
41–50 years	58	42.96
>50 years	20	14.82
Parity Distribution		
Nulliparous	11	8.15
Para 1–2	28	20.74
Para ≥3	96	71.11

Heavy menstrual bleeding was the most common presenting complaint observed in 62 women (45.93%), followed by polymenorrhea in 28 women (20.74%) and intermenstrual bleeding in 19 women (14.07%). Most patients presented with symptoms of less than one year duration.

Table 2: Clinical Presentation and Duration of Symptoms in D&C Cases (n=135)

Variable	Frequency	Percentage (%)
Bleeding Pattern		
Heavy menstrual bleeding	62	45.93
Polymenorrhea	28	20.74
Intermenstrual bleeding	19	14.07
Postmenopausal bleeding	11	8.15
Continuous bleeding	15	11.11
Duration of Symptoms		
<6 months	49	36.30
6–12 months	57	42.22
>12 months	29	21.48

According to the PALM-COEIN classification, leiomyoma was the most common structural cause accounting for 38 cases (28.15%), followed by ovulatory dysfunction in 29 cases (21.48%) and adenomyosis in 18 cases (13.33%).

Table 3: Clinical Classification According to PALM-COEIN System (n=135)

PALM-COEIN Category	Frequency	Percentage (%)
Polyp (AUB-P)	9	6.67
Adenomyosis (AUB-A)	18	13.33
Leiomyoma (AUB-L)	38	28.15
Malignancy and hyperplasia (AUB-M)	12	8.89
Ovulatory dysfunction (AUB-O)	29	21.48
Endometrial causes (AUB-E)	17	12.59
Iatrogenic (AUB-I)	5	3.70
Not otherwise classified (AUB-N)	7	5.19

Histopathological examination of endometrial samples from D&C cases revealed proliferative endometrium as the most common finding observed in 46 patients (34.07%), followed by secretory endometrium in 31 patients (22.96%). Disordered proliferative endometrium was noted in 17 cases (12.59%). Endometrial hyperplasia was identified in 18 cases (13.33%), including atypical hyperplasia in 4 patients (2.96%). Endometrial carcinoma was diagnosed in 4 women (2.96%), all of whom belonged to the postmenopausal age group.

Table 4: Histopathological Findings in D&C/Endometrial Sampling Cases (n=135)

Histopathological Pattern	Frequency	Percentage (%)
Proliferative endometrium	46	34.07
Secretory endometrium	31	22.96
Disordered proliferative endometrium	17	12.59
Endometrial hyperplasia without atypia	14	10.37
Endometrial hyperplasia with atypia	4	2.96
Atrophic endometrium	8	5.93
Endometritis	6	4.44
Endometrial polyp	5	3.70
Endometrial carcinoma	4	2.96

Histopathological evaluation of 72 uterine specimens demonstrated leiomyoma as the most common pathology observed in 29 specimens (40.28%), followed by adenomyosis in 18 specimens (25.00%). Combined leiomyoma with adenomyosis was identified in 11 cases (15.28%).

Table 5: Histopathological Findings in Uterine Specimens (n=72)

Histopathological Diagnosis	Frequency	Percentage (%)
Leiomyoma	29	40.28
Adenomyosis	18	25.00
Leiomyoma with adenomyosis	11	15.28
Endometrial polyp	5	6.94
Endometrial hyperplasia	4	5.56
Endometrial carcinoma	2	2.78
No significant pathology	3	4.17

Correlation between clinical diagnosis and histopathological findings showed significant association in cases clinically diagnosed as leiomyoma and adenomyosis. Histopathological confirmation of leiomyoma was obtained in 29 out of 38 clinically suspected cases (76.32%), while adenomyosis was confirmed in 18 out of 24 clinically suspected cases (75.00%). The association between clinical diagnosis and histopathological findings was statistically significant ($p<0.05$).

Table 6: Correlation between Clinical Diagnosis and Histopathological Findings

Clinical Diagnosis	Histopathological Confirmation	Percentage Confirmed
Leiomyoma (n=38)	29	76.32
Adenomyosis (n=24)	18	75.00
Endometrial polyp (n=8)	5	62.50
Endometrial hyperplasia (n=12)	9	75.00

Statistical analysis was performed using SPSS version 26.0. Chi-square test and Fisher's exact test were applied wherever appropriate. A statistically significant association was observed between clinical diagnosis and histopathological findings in structural causes of abnormal uterine bleeding ($p<0.05$).

DISCUSSION

In the present study, the majority of women with abnormal uterine bleeding belonged to the 41–50 years age group (42.96%), followed by the 31–40 years age group (28.89%). Similar age predominance in perimenopausal women has been reported in several Indian studies.

Nair and Kuriakose[4] observed that AUB was more common in women aged 41–50 years owing to hormonal imbalance and increasing incidence of structural uterine pathology in the perimenopausal period. Sharma et al.,[10] and Sushma et al.,[7] also reported comparable age distribution patterns in women undergoing endometrial evaluation for AUB.

The higher prevalence in this age group may be attributed to anovulatory cycles, declining ovarian function, leiomyoma, adenomyosis, and increasing endometrial pathology. Clinically, this highlights the importance of prompt evaluation in perimenopausal women to exclude premalignant lesions.

Multiparity was common in the present study, with 71.11% women being para ≥3. Similar findings have been reported in Indian observational studies evaluating AUB and endometrial histopathology.[11,12] Multiparity may predispose women to chronic endometrial and myometrial changes, adenomyosis, and leiomyoma formation, thereby contributing to abnormal bleeding patterns.

Heavy menstrual bleeding was the most common presenting symptom in the present study, observed in 45.93% women. Comparable findings were reported by Agrawal et al.,[14] who found heavy menstrual bleeding to be the predominant clinical presentation in women with AUB undergoing histopathological evaluation. Similar observations have also been noted by Singh and Dwivedi.[8] The predominance of heavy menstrual bleeding may be related to underlying structural lesions such as leiomyoma and adenomyosis, which were common in the present study. Recognition of the bleeding pattern is clinically important as it guides further diagnostic evaluation and management.

According to the PALM-COEIN classification, leiomyoma was the most common category in the present study accounting for 28.15% cases, followed by ovulatory dysfunction (21.48%) and adenomyosis (13.33%). Mishra and Sultan[15] demonstrated the usefulness of the FIGO PALM-COEIN classification in categorizing causes of AUB and improving clinicopathological correlation. Similar predominance of structural causes has been observed in Indian tertiary care studies.[5] Structural lesions are more likely to be identified in tertiary care hospitals because symptomatic patients with persistent or severe bleeding are preferentially referred for specialist management.

Histopathological evaluation of D&C specimens in the present study revealed proliferative endometrium as the most common finding (34.07%), followed by secretory endometrium (22.96%). Comparable observations were reported by S A et al.,[3] Nair and Kuriakose[4], and Z V et al.,[6] where proliferative endometrium was the predominant histopathological pattern in women with AUB. This may reflect the high frequency of anovulatory cycles in perimenopausal women leading to prolonged unopposed estrogenic stimulation of the endometrium. Identification of normal cyclical endometrium is clinically relevant as it helps avoid unnecessary surgical intervention.

Secretory endometrium constituted 22.96% cases in the present study. Similar findings have been documented in studies by Gopalan et al.,[11] and Doraiswami et al.,[16] The presence of secretory endometrium suggests ovulatory cycles in a subset of women presenting with AUB. This finding emphasizes that abnormal bleeding can occur even in women with apparently normal cyclical endometrial changes, thereby necessitating comprehensive clinical evaluation.

Disordered proliferative endometrium was observed in 12.59% cases in the present study. Comparable frequencies have been reported in Indian studies evaluating histopathological patterns of AUB.[11,12] Disordered proliferative endometrium is considered an intermediate pattern between normal proliferative endometrium and hyperplasia and may result from persistent estrogen stimulation without adequate progesterone opposition. Its identification is clinically important because such patients may require follow-up and hormonal management to prevent progression to hyperplasia.

Endometrial hyperplasia was identified in 13.33% cases, including atypical hyperplasia in 2.96% women. Similar rates of endometrial hyperplasia have been reported by Sushma et al.,[7] and Reang et al.,[9] The incidence of hyperplasia tends to increase in perimenopausal and postmenopausal women due to prolonged estrogen exposure, obesity, diabetes, and chronic anovulation. Histopathological identification of hyperplasia is essential because atypical hyperplasia carries a significant risk of progression to endometrial carcinoma and requires definitive management.

Endometrial carcinoma was diagnosed in 2.96% D&C cases and 2.78% uterine specimens in the present study. Comparable observations have been reported in Indian clinicopathological studies where malignancy constituted a smaller but clinically significant proportion of AUB cases.[12,13] All malignant cases in the present study occurred in postmenopausal women, consistent with established epidemiological trends. This underlines the importance of mandatory endometrial evaluation in women presenting with postmenopausal bleeding and persistent abnormal uterine bleeding.

Among uterine specimens, leiomyoma was the most common histopathological diagnosis (40.28%), followed by adenomyosis (25.00%). Similar predominance of leiomyoma and adenomyosis has been reported in Indian hysterectomy-based studies.[5,10] Leiomyoma contributes to abnormal uterine bleeding through increased endometrial surface area, altered uterine contractility, and vascular abnormalities, while adenomyosis is associated with dysmenorrhea and heavy menstrual bleeding due to ectopic endometrial glands within the myometrium. The higher prevalence of structural lesions in uterine specimens reflects the fact that hysterectomy is generally performed in women with persistent symptoms or failed medical management.

The present study demonstrated significant clinicopathological correlation in structural causes such as leiomyoma and adenomyosis. Similar observations were reported by Mishra and Sultan[15] in their clinico-histopathological correlation study based on the PALM-COEIN classification. Accurate correlation between clinical findings and histopathology is important for appropriate treatment planning and prognostication.

Dilatation and curettage and endometrial sampling continue to play an important role in the evaluation of abnormal uterine bleeding, particularly in perimenopausal and postmenopausal women. Patil et al.,[17] and Shivanagappa et al.,[18] highlighted the diagnostic utility of endometrial sampling and hysteroscopic evaluation in detecting significant endometrial pathology. Histopathological examination remains the definitive diagnostic modality for identifying premalignant and malignant lesions and differentiating functional from structural causes of AUB.

The present study was conducted in a tertiary care teaching hospital catering predominantly to rural and semi-urban populations of Maharashtra. The higher proportion of advanced structural pathology and women presenting after prolonged symptom duration may be attributable to delayed referral, poor awareness, limited access to specialist care, and referral bias inherent to tertiary care institutions. These findings emphasize the need for early gynecological evaluation and timely endometrial assessment in women with abnormal uterine bleeding.

CONCLUSION

Abnormal uterine bleeding is a common gynecological problem encountered predominantly in perimenopausal multiparous women and presents with varied clinical bleeding patterns. Structural causes such as leiomyoma and adenomyosis constituted important etiological factors in the present study, while proliferative endometrium was the most frequent histopathological finding on endometrial sampling.

Dilatation and curettage with histopathological evaluation remains an important diagnostic tool in the assessment of abnormal uterine bleeding, particularly for identifying endometrial hyperplasia and excluding malignant pathology. Histopathological examination provides valuable clinicopathological correlation and plays a crucial role in guiding appropriate management and preventing unnecessary interventions.

REFERENCES

1. Vaidya S, Lakhey M, Vaidya SA, et al. Histopathological pattern of abnormal uterine bleeding in endometrial biopsies. 2013;15(1):74-77.
2. Munro MG, Critchley HOD, Fraser IS; FIGO Menstrual Disorders Committee. The two FIGO systems for normal and abnormal uterine bleeding symptoms and classification of causes of abnormal uterine bleeding in the reproductive years: 2018 revisions. Int J Gynaecol Obstet. 2018;143(3):393-408. doi:10.1002/ijgo.12666.
3. S A, G P, D S. Study of histopathological patterns of endometrium in abnormal uterine bleeding. Int J Reprod Contracept Obstet Gynecol. 2021;10(4):1401-1405.
4. Nair BL, Kuriakose LS. Histopathological evaluation of endometrial sampling in perimenopausal women with abnormal uterine bleeding. Int J Reprod Contracept Obstet

Gynecol. 2021;10(8):3180-3185.
5. Asudani NP, Yadava PA, Vyas RC, Jani SK, Rawal NG, Dangar KV, et al. Evaluation of PALM-COEIN classification and management of abnormal uterine bleeding in peri-menopausal age group. Int J Reprod Contracept Obstet Gynecol. 2025;14(5):1490-1494.
6. Z V, P N. Histopathological evaluation of endometrial tissue in patients of abnormal uterine bleeding. Int J Reprod Contracept Obstet Gynecol. 2022;11(1):69-73. doi:10.18203/2320-1770.ijrcog20215077.
7. Sushma, Kaur S, Panjeta Gulia S, Khatri D, Malik V. Histopathological pattern of endometrial biopsy in abnormal uterine bleeding. Int J Reprod Contracept Obstet Gynecol. 2023;12(4):1013-1016.
8. Singh P, Dwivedi P. Endometrial patterns in abnormal uterine bleeding. Int J Reprod Contracept Obstet Gynecol. 2018;7(9):3578-3583. doi:10.18203/2320-1770.ijrcog20183804.
9. Reang NG, Bhaumik A, Banerjee A, Roy J, Datta A. Histopathological spectrum in cases of abnormal uterine bleeding: a cross sectional study in tertiary care hospital in Tripura. Int J Res Med Sci. 2024;12(1):110-114.
10. Sharma R, Yadav K, Gupta P. Retrospective study of histopathological pattern of endometrium in abnormal uterine bleeding. Int J Reprod Contracept Obstet Gynecol. 2020;9(4):1450-1455.
11. Gopalan U, Rajendiran S, Ranganathan K. Study of endometrial histopathology in women with abnormal uterine bleeding. Int J Reprod Contracept Obstet Gynecol. 2017;6(3):824-828.
12. Damle RP, Dravid NV, Suryawanshi KH, Gadre AS, Bagale PS, Ahire N. Clinicopathological spectrum of endometrial changes in perimenopausal and postmenopausal abnormal uterine bleeding: a 2 year study. J Clin Diagn Res. 2013;7(12):2774-2776.
13. Jetley S, Rana S, Jairajpuri ZS. Morphological spectrum of endometrial pathology in middle-aged women with atypical uterine bleeding: a study of 219 cases. J Midlife Health. 2013;4(4):216-220.
14. Agrawal R, Jaiswal G, Ekram M, Agrawal M. Pattern of bleeding with histopathological correlation in patients presenting with abnormal uterine bleeding. J Med Sci Health. 2025;11(1):1-7
15. 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):119-125
16. 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):426-430.
17. Patil SG, Bhute SB, Inamdar SA. Role of diagnostic hysteroscopy in abnormal uterine bleeding and histopathologic correlation. J Gynecol Endosc Surg. 2009;1(2):98-104.
18. Shivanagappa M, Veerabhadrappa VK, Mahesh M. Diagnostic role of hysteroscopy in abnormal uterine bleeding: a comparative study of hysteroscopy findings with histopathology from Mysore, South India. Int J Reprod Contracept Obstet Gynecol. 2019;8(2):398-401.