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Original Research Article

Histopathological study of endometrial abnormalities in women with abnormal uterine bleeding in a rural population

Manisha, Fayaz Khan H., Bhuvneshwari Upadhyay, Anushka Gupta, Manju M.*

Department of Obstetrics and Gynecology, FH Medical College, Agra, Uttar Pradesh, India

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*Correspondence:

Dr. Manju M.,

E-mail: Historybuff735@gmail.com

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ABSTRACT

Background: Abnormal uterine bleeding (AUB) is one of the most frequently encountered gynecological complaints and may occur across different reproductive age groups. It can substantially impair quality of life and may arise from functional disturbances or structural abnormalities of the uterus and endometrium. Histopathological evaluation of endometrial tissue remains an important diagnostic modality for identifying the underlying pathology, particularly in resource-constrained rural settings where access to advanced diagnostic facilities may be limited. This study aimed to evaluate the histopathological patterns of endometrial abnormalities among women aged 19–65 years presenting with AUB in a rural population and to determine the frequency and spectrum of organic and non-organic endometrial findings.

Methods: This cross-sectional observational study was conducted in the Department of Obstetrics and Gynaecology, F.H. Medical College and Hospital, Agra, from September 2023 to February 2025. A total of 278 women aged 19–65 years presenting with AUB and undergoing endometrial sampling were included. Endometrial tissue was obtained through biopsy or dilatation and curettage, processed routinely, stained with hematoxylin and eosin, and examined by light microscopy. Data were analyzed using descriptive statistics.

Results: The highest proportion of patients belonged to the 31–35-year age group (30.93%). Menorrhagia was the most frequent bleeding pattern, accounting for 55% of cases. Among organic causes of AUB, endometrial hyperplasia was the predominant histopathological finding (76.60%), followed by endometritis (17.02%), endometrial carcinoma (4.26%), and endometrial polyps (2.13%). Among non-organic causes, secretory endometrium was the most frequent histopathological pattern (53.70%), followed by proliferative endometrium (44.44%), disordered proliferative endometrium (1.39%), and atrophic endometrium (0.46%).

Conclusions: Histopathological examination of endometrial tissue provides valuable diagnostic information in women presenting with AUB and facilitates the identification of benign, premalignant, and malignant endometrial abnormalities. It remains a practical and accessible diagnostic approach, particularly in rural and resource-limited healthcare settings.

Keywords: Abnormal uterine bleeding, Curettage, Endometrial hyperplasia, Histopathology, Rural health

INTRODUCTION

Abnormal uterine bleeding (AUB) is one of the most frequently encountered gynecological complaints and accounts for a substantial proportion of visits to gynecology outpatient departments across different age groups.¹ It encompasses abnormalities in the frequency,

regularity, duration, or volume of uterine bleeding and may result from a wide spectrum of functional, structural, or systemic disorders. In addition to its clinical consequences, AUB can adversely affect physical well-being, psychosocial health, daily activities, and overall quality of life.^{1,2}

Globally, AUB has been reported to affect approximately 9-14% of women of reproductive age.³ Indian studies have documented a comparatively higher burden, with an estimated prevalence of approximately 17-30% among women attending gynecological services, particularly around the extremes of reproductive life and the perimenopausal period.^{4,5} The burden may be greater in rural communities, where socioeconomic limitations, inadequate health awareness, delayed health-seeking behavior, and restricted access to specialized diagnostic services may contribute to delayed diagnosis and treatment.⁶

To standardize the evaluation of AUB, the International Federation of Gynecology and Obstetrics (FIGO) introduced the PALM-COEIN classification system. This system categorizes etiological factors into structural causes (polyp, adenomyosis, leiomyoma, and malignancy/hyperplasia) and non-structural causes comprising coagulopathy, ovulatory dysfunction, endometrial disorders, iatrogenic causes, and conditions not yet classified.⁷ This classification provides a systematic framework for clinical assessment and facilitates appropriate diagnostic investigation.

Among the various etiological categories of AUB, endometrial abnormalities are of particular clinical importance because they encompass physiological changes as well as inflammatory, hyperplastic, premalignant, and malignant lesions. Histopathological examination therefore plays a central role in establishing a definitive diagnosis, especially when endometrial hyperplasia or malignancy is suspected.⁸

Endometrial sampling by biopsy or dilatation and curettage is an established diagnostic approach for evaluating women with AUB after pregnancy-related causes and other relevant medical conditions have been excluded. Histological assessment permits the identification of proliferative and secretory patterns, endometrial atrophy, endometritis, hyperplasia, and carcinoma.⁸⁻¹⁰ In settings where advanced investigations such as hysteroscopy and sophisticated imaging techniques are not readily accessible, conventional endometrial sampling followed by histopathological examination continues to provide clinically relevant diagnostic information.

Rural populations frequently encounter barriers to timely gynecological evaluation, potentially resulting in delayed detection of significant endometrial pathology. The present study was therefore undertaken to evaluate the spectrum of histopathological abnormalities in endometrial samples obtained from women aged 19-65 years presenting with AUB in a rural population, with particular emphasis on the distribution of organic and non-organic endometrial lesions.

METHODS

Study design and setting

This cross-sectional observational study was conducted in the Department of Obstetrics and Gynaecology, F.H. Medical College and Hospital, Agra, from September 2023 to February 2025, over a period of 18 months. The study evaluated the histopathological spectrum of endometrial abnormalities among women from a rural population presenting with abnormal uterine bleeding.

Inclusion criteria

A total of 278 women aged 19-65 years who presented with AUB and underwent endometrial sampling during the study period were included.

Exclusion criteria

Women within the specified age range presenting with AUB were included irrespective of parity or menstrual pattern. Patients with known bleeding disorders, active pelvic infections, or pregnancy-related complications were excluded from the study.

Endometrial sampling and histopathological examination

Endometrial tissue samples were obtained by either Pipelle biopsy or dilatation and curettage, according to the clinical indication. Immediately after collection, the specimens were fixed in 10% buffered formalin and subsequently processed using standard histopathological techniques with paraffin embedding. Histological sections were prepared, stained with hematoxylin and eosin, and examined under light microscopy by experienced pathologists. The histopathological findings were categorized into physiological endometrial patterns, including proliferative and secretory endometrium, as well as atrophic endometrium, endometritis, different patterns of endometrial hyperplasia, endometrial polyps, and malignant lesions. Histopathological findings were additionally evaluated in relation to the patient's age and clinical pattern of bleeding.

Statistical analysis

The collected data were entered into Microsoft Excel and analyzed using descriptive statistical methods. Categorical variables were expressed as frequencies and percentages. The findings were presented in tabular and graphical form, where appropriate, to demonstrate the distribution of demographic, clinical, and histopathological characteristics.

RESULTS

In the present study, the highest incidence of AUB was observed in the 31-35 years age group (30.93%), followed

by the 36-40 years age group (20.86%), indicating that AUB was most frequently encountered among women in the early-to-middle reproductive age groups (Table 1).

Table 1: Age-wise distribution of women with abnormal uterine bleeding (n=278).

Age group (years)	Cases	Percentage (%)
<25	6	2.15
25-30	44	15.82
31-35	86	30.93
36-40	58	20.86
41-45	53	19.06
46-50	20	7.19
51-55	4	1.40
>55	7	2.51
Total	278	100

Menorrhagia was the predominant bleeding pattern, observed in 55% of patients, followed by metrorrhagia in 24%. Polymenorrhoea was recorded in 14.50% of cases, whereas oligomenorrhoea and postmenopausal bleeding were less frequently observed (Table 2).

Table 2: Distribution of patients according to pattern of bleeding (n=278).

Pattern of bleeding	No. of cases	Percentage (%)
Menorrhagia	152	55.00
Metrorrhagia	67	24.00
Polymenorrhoea	40	14.50
Oligomenorrhoea	10	3.50
Postmenopausal bleeding	9	3.00
Total	278	100.00

Table 3: Distribution of histopathological patterns in organic causes of AUB (n=47).

Histopathological pattern	No. of cases	Percentage (%)
Organic causes of AUB (n=47)		
Endometrial polyps	1	2.13
Endometritis	8	17.02
Endometrial hyperplasia	36	76.60
Endometrial carcinoma	2	4.26
Total	47	100.00
Non-organic causes of AUB (n=216)		
Proliferative endometrium	96	44.44
Secretory endometrium	116	53.70
Disordered proliferative endometrium	3	1.39
Atrophic endometrium	1	0.46
Total	216	100.00

Among organic causes of AUB, endometrial hyperplasia was the predominant histopathological finding, accounting

for 76.60% of cases, followed by endometritis (17.02%), endometrial carcinoma (4.26%), and endometrial polyps (2.13%). Among non-organic causes, secretory endometrium was the most frequent histopathological pattern (53.70%), followed by proliferative endometrium (44.44%), disordered proliferative endometrium (1.39%), and atrophic endometrium (0.46%) (Table 3).

Among the different types of endometrial hyperplasia, simple hyperplasia without atypia was the most common, accounting for 85.29% of cases. Simple hyperplasia with atypia accounted for 8.82%, whereas complex hyperplasia without atypia and complex hyperplasia with atypia each accounted for 2.94% of cases (Table 4).

Table 4: Distribution of cases based on type of endometrial hyperplasia (n=34).

Type of hyperplasia	No. of cases	Percentage (%)
Simple hyperplasia without atypia	29	85.29
Simple hyperplasia with atypia	3	8.82
Complex hyperplasia without atypia	1	2.94
Complex hyperplasia with atypia	1	2.94
Total	34	100.00

Pseudodecidualisation and inconclusive histopathological reports were uncommon findings, each accounting for 1.1% of cases, indicating that a definitive histopathological interpretation was obtained in the majority of endometrial samples examined (Figure 1).

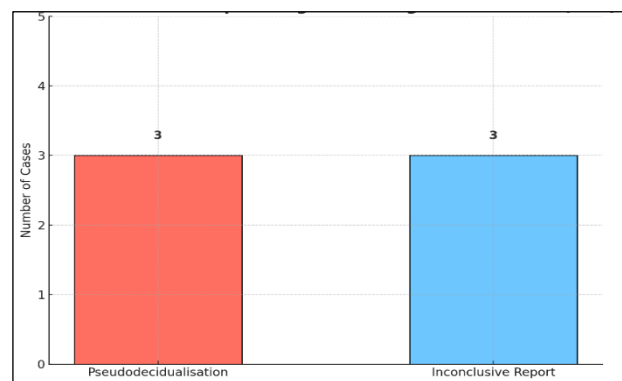


Figure 1: Miscellaneous histopathological findings in AUB cases (n=47).

DISCUSSION

Abnormal uterine bleeding (AUB) is one of the most common complaints encountered in gynecological practice. Although it may result from functional disturbances, approximately 25% of affected women have an identifiable organic cause.¹¹ In the present study,

51.79% of patients belonged to the 31-40-year age group, while 26.25% were aged 41-50 years, findings comparable with earlier studies.^{12,13}

Histopathological evaluation remains an important component of AUB assessment. Dilatation and curettage may have both diagnostic and therapeutic roles, while endometrial biopsy has demonstrated high sensitivity for detecting significant endometrial abnormalities.¹⁴⁻¹⁷ These methods are particularly valuable in settings where advanced diagnostic facilities are limited.

Menorrhagia was the most common clinical presentation (55%), followed by metrorrhagia (24%). Among organic lesions, endometrial hyperplasia was the predominant finding (76.60%). Simple hyperplasia without atypia constituted 85.29% of the hyperplastic lesions, whereas complex hyperplasia was uncommon. The higher occurrence of hyperplasia with advancing age emphasizes the importance of appropriate endometrial assessment in older women with AUB.

Among non-organic findings, secretory endometrium was the predominant pattern (53.70%), followed by proliferative endometrium (44.44%). Endometrial carcinoma accounted for 4.26% of organic lesions. These findings highlight the importance of histopathological examination in detecting clinically significant endometrial pathology.

Overall, the study demonstrates a broad histopathological spectrum in women with AUB. Endometrial sampling with histopathological evaluation remains a practical and valuable diagnostic approach, particularly in rural and resource-limited healthcare settings.

CONCLUSION

Histopathological examination of endometrial tissue constitutes an important diagnostic component in the evaluation of women presenting with abnormal uterine bleeding. The present study demonstrated a broad spectrum of endometrial findings ranging from physiological proliferative and secretory patterns to inflammatory, hyperplastic, and malignant lesions. Menorrhagia was the predominant clinical presentation, while endometrial hyperplasia represented the most common organic pathology. Although endometrial carcinoma constituted a relatively small proportion of cases, its detection highlights the importance of timely endometrial evaluation. Histopathological assessment therefore remains a practical, informative, and accessible diagnostic approach for AUB, particularly in rural and resource-constrained healthcare settings.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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