Original Article

A Retrospective Study of Endometrial Patterns in Patients Presenting with Abnormal Uterine Bleeding at A Tertiary Care Center

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Abstract

Background: Abnormal uterine bleeding (AUB) is a frequent gynaecological issue among women of all ages amongst the most important causes of morbidity. Histopathological evaluation of the endometrium is important for determining the cause of the problem, particularly for the identification of ill-defined and malignant conditions. The aim is to evaluate the spectrum of endometrial histopathology in patients with AUB. Design: Translational research involving comparison of specimens obtained in a cohort of patients with AUB. Methods: Translational research comparing specimens obtained in a cohort of patients with AUB. The objective is to assess the distribution of different endometrial patterns, to correlate this endometrial pattern with the different age groups and to assess the frequency of premalignant and malignant lesions. **Material and Methods:** Retrospective observational study was carried out in the department of Pathology, Dr. RajendraGode Medical College and Hospital for three years from March 2023 to March 2026. Two hundred patients were included, who presented with AUB and underwent an endometrial biopsy. Hospital charts and histopathology reports were used to obtain data. Endometrial patterns were classified and the statistical analysis with descriptive and inferential methods was done. **Results:** Most of the patients were in the perimenopausal age group (41-50 years). Most frequently presented symptom was menorrhagia. Histopathological examination showed proliferating endometrium (30%), disordered proliferating endometrium (20%) and secretory endometrium (15%) were the most frequently occurring conditions. In 11% of cases there was endometrial hyperplasia, most often without atypia, and in 6% endometrial carcinoma of which most were in postmenopausal women. However, most AUB cases were functional and pathological lesions were noted to increase with age. **Conclusion:** AUB is most common in perimenopausal women, and is often linked to functional changes in the endometrium. In older age groups, however, there is a large number of cases that have premalignant as well as malignant lesions. Endometrial sampling is essential in the diagnosis for early detection and suitable management of AUB.

Keywords: Abnormal uterine bleeding, Endometrial patterns, Histopathology; Endometrial hyperplasia; Endometrial carcinoma; Perimenopausal bleeding.

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Introduction

One of the most frequent of women's gynecological complaints seen in clinical practice, abnormal uterine bleeding (AUB) contributes significantly to outpatient clinic visits and in-hospital hospitalizations in women of reproductive, perimenopausal and post menstrual age groups.[1] Any disruption or deviation from the normal menstrual cycle is considered abnormal and can cause anemia, fatigue and psychological stress in women and seriously affect their quality of life.[2] The etiology/pathogenesis of AUB is complex including structural as well as functional uterine and endometrial abnormalities.

The International Federation of Gynecology and Obstetrics has established a PALM-COEIN classification system to help standardize the evaluation and management of AUB by dividing the causes into structural (Polyp, Adenomyosis, Leiomyoma, Malignancy and hyperplasia) and non-structural (Coagulopathy, Ovulatory dysfunction, Endometrial, Iatrogenic and Not yet classified).[3] Of these, endometrial pathology is perhaps most important, particularly when women present with bleeding that persists or is unexplained.

The inside lining of the uterus (endometrium) changes in shape due to hormonal stimulation from the ovary in a cyclical manner. Bleeding patterns can become abnormal if there's a change in the hormonal balance or any kind of reaction in the lining of the uterus. The gold standard for the diagnosis of AUB is histopathological examination of the endometrium because it enables the direct visualization of tissue architecture and identification of specific pathological entities associated with AUB, including disordered proliferative endometrium, hyperplasia, chronic endometritis and malignancy.[4] Dilatation of the uterus and curettage of the uterine cavity, endometrial biopsy and specimens taken during a hysterectomy result in

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excellent diagnostic information which helps direct clinical management.

Endometrial changes vary greatly among the ages. Functional causes (anovulatory cycles) are more common in women in reproductive age, whereas in perimenopausal and postmenopausal women, there is a higher incidence of pre-cancerous condition and endometrial cancer.[5] It is important to note early detection of endometrial hyperplasia, especially when the hyperplasia is atypical, is critical because it is a precursor to endometrial carcinoma and early intervention is necessary.[6] Since the endometrial pattern assessment is not only diagnostic but also plays a role in risk stratification and in prevention of the disease progression, it is important to assess endometrial pattern in patients with AUB.

Unlike the FIGO PALM-COEIN classification, which is primarily used for the clinical categorization of abnormal uterine bleeding, pathological assessment of endometrial causes depends on histomorphological evaluation of endometrial biopsy specimens. This assessment is generally interpreted in correlation with established classification systems, particularly the WHO and EIN systems, for identifying hyperplastic and premalignant endometrial lesions. In routine pathology practice, a structured reporting format for endometrial biopsies in cases of abnormal uterine bleeding usually includes assessment of sample adequacy, identification of the endometrial pattern or phase, evaluation for the presence of endometrial hyperplasia according to WHO/EIN criteria, evidence of inflammation, benign structural lesions such as endometrial polyps, and any features of atypia or malignancy. Important pathological frameworks include the WHO Classification of Endometrial Hyperplasia, updated in 2020/2022, which broadly categorizes lesions into hyperplasia without atypia and atypical hyperplasia, also referred to as endometrioid intraepithelial neoplasia.[8]

Various studies of different populations have shown different distribution of endometrial patterns in AUB, which were influenced by various demographic, reproductive and health-care parameters.[8] There is however a need for local information especially in low and middle income countries, such as India, where there may be differences in the prevalence of risk factors, socio-economic factors and the pattern of health seeking behavior which might affect the pattern of endometrial pathology. The data are valuable in developing a suitable diagnostic strategy and management plan for the specific population.

To assess the histopathological spectrum of endometrial pattern in cases of AUB in a tertiary care center in this regard the present study was conducted. The study also will attempt to link these patterns to various age groups, as well as the rate of occurrence of any premalignant or malignant lesions, to help aid clinical decision making and patient outcomes.

Materials and Methods

This retrospective observational study was conducted in the Department of Pathology at Dr. Rajendra Gode Medical College and Hospital after obtaining approval from the Institutional Ethics Committee. The study included all eligible cases over a period of three years, from March 2023 to March 2026, corresponding to the initial operational phase of the institution.

The study population comprised women presenting with Abnormal uterine bleeding who underwent endometrial sampling in the form of endometrial biopsy, dilatation and curettage, or hysterectomy. Cases were identified from hospital records, including outpatient and inpatient registers, and relevant histopathology reports were retrieved from the Department of Pathology archives. Only those patients with complete clinical details and available histopathological reports were included in the study.

Women of all age groups presenting with abnormal uterine bleeding, classified according to the PALM-COEIN classification system of the International Federation of Gynecology and Obstetrics, were included. Patients with pregnancy-related bleeding, known bleeding disorders, or those with inadequate or insufficient endometrial samples were excluded from the analysis.

Data were collected retrospectively using a structured data extraction format. The variables recorded included patient age, clinical presentation, type of abnormal uterine bleeding, and histopathological diagnosis of the endometrial sample. Patients were categorized into age groups such as reproductive, perimenopausal, and postmenopausal for analysis. Histopathological findings were classified into proliferative endometrium, secretory endometrium, disordered proliferative endometrium, endometrial hyperplasia (with or without atypia), chronic endometritis, atrophic endometrium, and endometrial carcinoma.

The collected data were entered into Microsoft Excel and analyzed using SPSS Version 23 statistical software. Descriptive statistics were used to summarize the data in terms of frequencies and percentages. The association between age groups and various endometrial patterns was assessed using the chi-square test. A p-value of less than 0.05 was considered statistically significant.

Confidentiality of patient information was strictly maintained throughout the study. As this was a retrospective record-based study, no direct patient intervention was involved, and all data were anonymized prior to analysis in accordance with institutional ethical guidelines.

Results

A total of 200 patients presenting with Abnormal uterine bleeding who underwent endometrial sampling were included in the present study. The age-wise distribution of patients is depicted in Table 1. The majority of patients belonged to the perimenopausal age group of 41–50 years, accounting for 38% of cases, followed by the 31–40 years age group (26%). Women in the reproductive age group (21–30 years) constituted 14% of cases, while postmenopausal women (>50 years) accounted for a smaller proportion, with 16% in the 51–60 years group and 6% above 60 years. These findings indicate that AUB was most commonly encountered in the perimenopausal age group.

Table 1: Age-wise distribution of patients

Age Group (years)	Number of cases	Percentage (%)
21–30	28	14.00%
31–40	52	26.00%
41–50	76	38.00%
51–60	32	16.00%
>60	12	6.00%
Total	200	100%

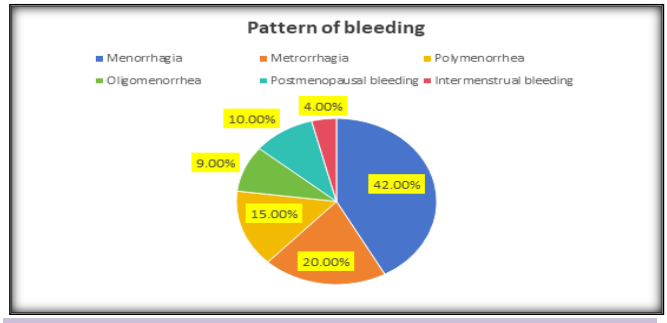

Figure 1: Distribution of bleeding patterns

The clinical pattern of bleeding is summarized in [Figure 1]. Menorrhagia was the most common presenting complaint, observed in 42% of patients, followed by metrorrhagia (20%) and polymenorrhea (15%). Postmenopausal bleeding was reported in 10% of cases, while oligomenorrhea and intermenstrual bleeding accounted for 9% and 4% of cases, respectively. This distribution highlights that heavy menstrual bleeding remains the predominant clinical presentation in AUB.

The distribution of various endometrial histopathological patterns is shown in [Table 2]. The most common finding was proliferative endometrium, observed in 30% of cases, followed by disordered proliferative endometrium in 20%. Secretory endometrium was noted in 15% of patients. Among pathological lesions, endometrial hyperplasia was found in 11% of cases, endometrial polyps in 7%, and carcinoma in 6%. Atrophic endometrium and chronic endometritis accounted for 6% and 5% of cases, respectively. Overall, functional causes constituted the majority of endometrial patterns.

Table 2: Distribution of endometrial patterns

Endometrial Pattern	Number of cases	Percentage (%)
Proliferative endometrium	60	30.00%
Secretory endometrium	30	15.00%
Disordered proliferative	40	20.00%
Endometrial hyperplasia	22	11.00%
Atrophic endometrium	12	6.00%
Chronic endometritis	10	5.00%
Endometrial polyp	14	7.00%
Endometrial carcinoma	12	6.00%
Total	200	100%

The relationship between endometrial patterns and age groups is illustrated in [Figure 2]. Proliferative and secretory endometrium were more commonly observed in the reproductive age group, whereas disordered proliferative endometrium and hyperplasia were predominantly seen in perimenopausal women. Atrophic endometrium and endometrial carcinoma were mainly encountered in postmenopausal women, indicating an age-related shift towards more significant pathological findings.

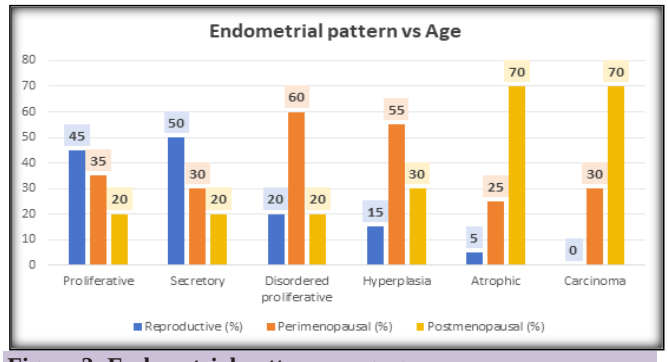

Figure 2: Endometrial pattern vs age group

The distribution of endometrial hyperplasia is detailed in [Table 3]. Among the 22 cases of hyperplasia, the majority (72.7%) were without atypia, while 27.3% showed atypical features. This suggests that although hyperplasia is relatively common, the proportion of high-risk atypical lesions is comparatively lower.

The incidence and distribution of malignancy are presented in [Table 4]. Endometrial carcinoma was diagnosed in 6% of cases (n=12). Of these, the majority (83.3%) occurred in postmenopausal women, while only a small proportion was observed in the perimenopausal group. No cases were reported in the reproductive age group. This emphasizes the clinical importance of evaluating postmenopausal bleeding for underlying malignancy.

Overall, the study demonstrated that AUB was most prevalent in perimenopausal women, with menorrhagia being the most common presenting symptom. Functional endometrial patterns predominated; however, a significant proportion of patients exhibited premalignant and malignant lesions, particularly in the older age groups, underscoring the importance of histopathological evaluation in all cases of abnormal uterine bleeding.

Table 3: Types of endometrial hyperplasia

Type of hyperplasia	Number of cases	Percentage (%)
Without atypia	16	72.70%
With atypia	6	27.30%
Total	22	100%

Table 4: Distribution of malignancy

Parameter	Value
Total carcinoma cases	12
Percentage	6.00%
Postmenopausal cases	10
Perimenopausal cases	2

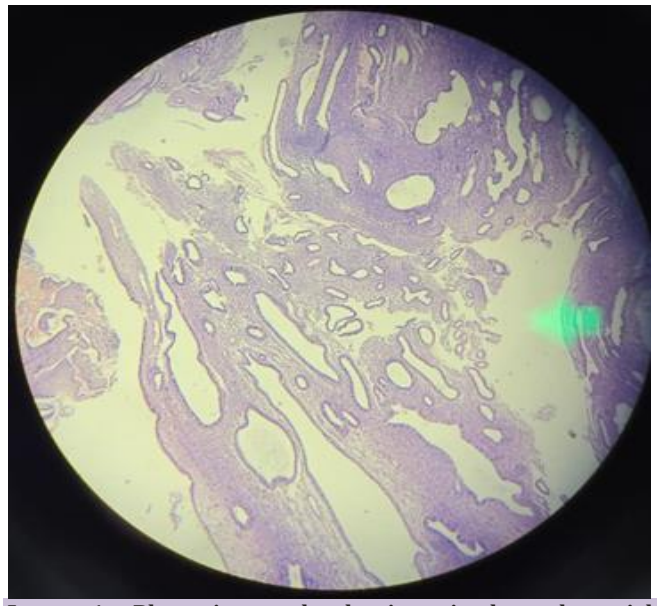

Image 1: Photomicrograph showing simple endometrial hyperplasia without atypia

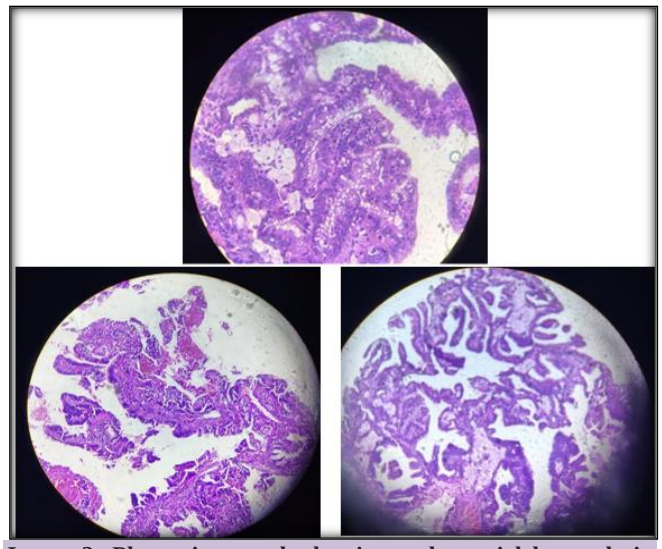

Image 2: Photomicrograph showing endometrial hyperplasia with atypia

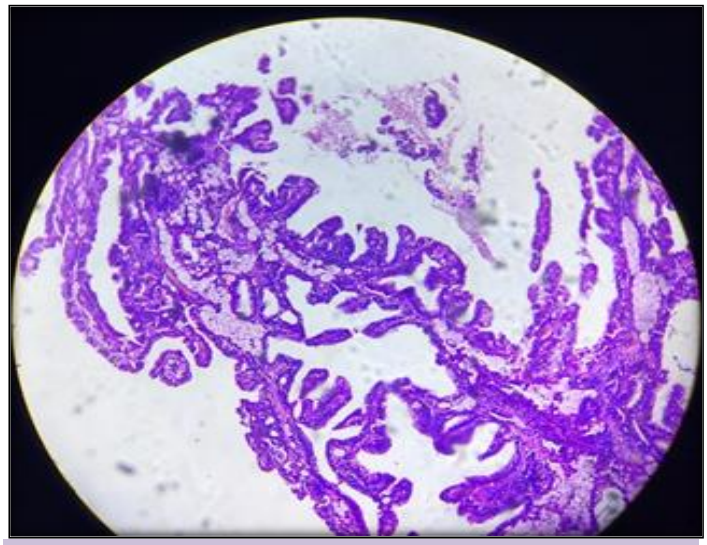

Image 3: Photomicrograph showing endometrial carcinoma

Discussion

Abnormal uterine bleeding (AUB) is a very common gynecological problem in everyday clinical practice and it is of great clinical importance as the pathological basis of this condition can vary from functional changes of the endometrium to premalignant or malignant lesions. Therefore, histopathology still remains a key role in the management of AUB especially in perimenopausal and postmenopausal women. In the present study, the spectrum of endometrial histopathological patterns in the patients with AUB was evaluated and correlated with age and clinical presentation.

The highest prevalence of AUB cases was seen in age group 41-50 years [Table 1] with 11 (38%) cases. This result was similar to the study done by Anitha et al,[20] which indicated that 41-50 years old is the most common age group that presents with AUB. Similarly, Pathak et al,[21] reported that most of patients with AUB are 40–49 years age group. Likewise, peri- and postmenopausal women reported by Vichitra et al,[22] had the highest prevalence of AUB in the peri-menopausal age group. This excess can be explained by anovulatory cycles, hormonal imbalance and irregular changes in the maturation of the endometrium during the menopausal transition.

In the present study, menorrhagia occurred in the maximum number of cases (42%) [Figure 1]. Gupta et al,[23] found the same in their study on clinical presentation in women with AUB, which noted that heavy bleeding was one of the most common clinical presentations. The same, Pathak et al,[21] also mentioned that, the most common clinical presentation in women who came for histopathological evaluation for AUB was found to be menorrhagia. The predominance of menorrhagia in the present study could be attributed to hormonal imbalance, estrogenic stimulation, and endometrium response; the latter would be especially affected in women near menopause.

In the present study, proliferative endometrium pattern was the most common finding (30%), followed by disordered proliferative and secretory endometrium patterns (20% and 15% respectively) [Table 2]. These findings are in agreement with Anitha et al,[20] who reported normal cycling endometrium as the most common pattern and disordered proliferative endometrium as the commonest pathological pattern. Alshdaifat et al,[24] in a tertiary referral hospital-based study, also observed that benign functional endometrial patterns constituted a major proportion of endometrial biopsy findings in AUB. GeethaMala,[25] reported proliferative endometrium as the most frequent histopathological finding, followed by endometrial hyperplasia without atypia. These findings support the observation that most cases of AUB are related to benign and hormonally mediated endometrial changes.

The age-wise distribution of endometrial patterns in the present study demonstrated that proliferative and secretory endometrium were more common in the reproductive age group, whereas disordered proliferative endometrium and hyperplasia were predominantly seen in perimenopausal women. Atrophic endometrium and carcinoma were mainly observed in postmenopausal women [Figure 2]. Anitha et al,[20] similarly emphasized that endometrial sampling is particularly important after 40 years of age, when premalignant and malignant lesions become more frequent. Vichitra et al,[22] also observed that hyperplastic and neoplastic endometrial lesions were more common among peri- and postmenopausal women. Karimi et al,[26] reported that clinicopathological correlation and ultrasonographic assessment are useful in identifying significant endometrial pathology among women with AUB. Thus, the present findings reinforce the importance of age-based risk stratification in patients presenting with AUB.

Endometrial hyperplasia was observed in 11% of cases in the present study, with the majority being without atypia (72.7%) and 27.3% showing atypia [Table 3]. This is comparable with Pathak et al,[21] who reported endometrial hyperplasia in 12% of cases. Karimi et al,[26] observed endometrial hyperplasia in 7.3% of women with AUB, most commonly in the perimenopausal age group. GeethaMala,[25] reported endometrial hyperplasia without atypia as one of the common histopathological findings in AUB. Suneja and Saldanha,[27] also observed that altered hormone receptor expression may contribute to abnormal endometrial response in AUB. Although hyperplasia without atypia is more frequent, identification of atypical hyperplasia remains clinically important because of its potential association with endometrial carcinoma.

Endometrial carcinoma was detected in 6% of cases in the present study, with the majority occurring in postmenopausal women [Table 4]. This finding is higher than that reported by Anitha et al,[20] who observed carcinoma in 0.79% of cases, and Pathak et al,[21] who reported carcinoma in 3% of cases. However, GeethaMala,[25] documented endometrial carcinoma in 5.6% of cases, mostly among postmenopausal women, which is close to the present study. Vichitra et al,[22] also highlighted that postmenopausal bleeding is an important clinical indicator of underlying endometrial malignancy. These findings emphasize that postmenopausal bleeding should always be evaluated carefully, and endometrial sampling should not be delayed in older women presenting with AUB.

Overall, the present study findings are consistent with recent literature. AUB was most commonly seen in perimenopausal women, menorrhagia was the predominant clinical presentation, and functional endometrial patterns formed the major histopathological group. However, the presence of endometrial hyperplasia and carcinoma, particularly in peri- and postmenopausal women, highlights the diagnostic value of histopathological examination. The findings of this study support routine endometrial sampling in clinically indicated cases of AUB, especially in women above 40 years of age and in all women presenting with postmenopausal bleeding.

Conclusion

The present study demonstrated that Abnormal uterine bleeding is most commonly encountered in the perimenopausal age group, with menorrhagia being the predominant clinical presentation. Histopathological evaluation revealed that functional endometrial patterns, particularly proliferative and disordered proliferative endometrium, constituted the majority of cases, indicating a strong hormonal influence in the etiology of AUB.

A significant proportion of patients also exhibited premalignant lesions such as endometrial hyperplasia, predominantly without atypia, while a smaller yet clinically important percentage of cases showed endometrial carcinoma, mainly in postmenopausal women. These findings highlight the progressive shift from functional to pathological endometrial changes with advancing age.

Thus, endometrial sampling remains an essential diagnostic tool in the evaluation of AUB, especially in perimenopausal and postmenopausal women, for early detection of hyperplasia and malignancy. Timely histopathological assessment facilitates appropriate clinical management and helps in preventing disease progression, thereby improving patient outcomes.

Overall, the study underscores the importance of routine endometrial evaluation in all cases of abnormal uterine bleeding and supports its role as a cornerstone in gynecological practice.

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Conflicts of interest

There are no conflicts of interest.

References

1. Munro MG, Critchley HOD, Fraser IS. The FIGO classification of causes of abnormal uterine bleeding. Int J Gynaecol Obstet. 2011;113(1):3–13.
2. Fraser IS, Langham S, Uhl-Hochgraeber K. Health-related quality of life and economic burden of abnormal uterine bleeding. Expert Rev Obstet Gynecol. 2009;4(2):179–189.
3. Munro MG, Critchley HOD, Broder MS, Fraser IS, et al. FIGO classification system (PALM-COEIN) for causes of abnormal uterine bleeding. Int J Gynaecol Obstet. 2011;113(1):3–13.
4. Dangal G. A study of endometrium of patients with abnormal uterine bleeding. JNMA J Nepal Med Assoc. 2003;42(150):258–261.
5. Doraiswami S, Johnson T, Rao S, Rajkumar A, Vijayaraghavan J, Panicker VK, et al. Study of endometrial pathology in abnormal uterine bleeding. J ObstetGynaecol India. 2011;61(4):426–430.
6. Kurman RJ, Kaminski PF, Norris HJ. The behavior of endometrial hyperplasia. Cancer. 1985;56(2):403–412.
7. Abdullah LS. Histopathological pattern of endometrial sampling performed for abnormal uterine bleeding. Bahrain Med Bull. 2011;33(4):1–6.
8. WHO Classification of Tumours Editorial Board. Female genital tumours. 5th ed. Lyon: International Agency for Research on Cancer; 2020. WHO Classification of Tumours Series, Vol. 4..
9. Kumari A, Kumar R, Sinha A, Kumari S, Sinha S, Kumari S, et al. Endometrial histopathology in abnormal uterine bleeding: a retrospective study. Int J ReprodContraceptObstet Gynecol. 2019;8(2):589–593.
10. Sharma A, Dogra Y. Trends of abnormal uterine bleeding in tertiary centre: histopathological evaluation. J Midlife Health. 2013;4(4):216–220.
11. Singh P, Dwivedi P. Histopathological evaluation of endometrium in abnormal uterine bleeding. J ObstetGynaecol India. 2016;66(2):100–104.
12. Jetley S, Rana S, Jairajpuri ZS. Morphological spectrum of endometrial pathology in abnormal uterine bleeding. Int J Appl Basic Med Res. 2013;3(1):45–48.
13. Bhosle A, Fonseca M. Evaluation and histopathological correlation of abnormal uterine bleeding in perimenopausal women. Bombay Hosp J. 2010;52(1):69–72.
14. Khan S, Hameed S, Umber A, et al. Histopathological patterns of endometrium in abnormal uterine bleeding. Cureus. 2020;12(9):e10424.
15. Doraiswami S, Johnson T, Rao S, Rajkumar A, Vijayaraghavan J, Panicker VK, et al. Study of endometrial pathology in abnormal uterine bleeding. J ObstetGynaecol India. 2011;61(4):426–430.
16. Abdullah LS. Histopathological pattern of endometrial sampling performed for abnormal uterine bleeding. Bahrain Med Bull. 2011;33(4):1–6.
17. Gupta N, Gupta A, Bansal N, Sharma R, et al. Endometrial patterns in abnormal uterine bleeding: a retrospective analysis. Int J ReprodContraceptObstet Gynecol. 2021;10(3):1021–1026.
18. Trimble CL, Kauderer J, Zaino R, Silverberg S, Lim PC, Burke JJ, et al. Concurrent endometrial carcinoma in women with atypical hyperplasia. Cancer. 2006;106(4):812–819.
19. Reed SD, Newton KM, Clinton WL, Epplein M, Garcia R, Allison K, et al. Incidence of endometrial hyperplasia. Am J Obstet Gynecol. 2009;200(6):678.e1–678.e6.
20. Anitha S, Pooja G, Sowmya D. Study of histopathological patterns of endometrium in abnormal uterine bleeding. Int J ReprodContraceptObstet Gynecol. 2021;10(4):1401-1405.
21. Pathak M, Gupta N, Pathak S. Histopathology of endometrium in cases of abnormal uterine bleeding. J Acad Med Pharm. 2023;5(4):1613-1617.
22. Vichitra S, Rajeswari K, Prabha S. Histopathological profile of endometrium among peri and postmenopausal women presenting with abnormal uterine bleeding. J Midlife Health. 2025.
23. Gupta A, Singh A, Aditya V, Tiwari HC, Chauhan M. Clinical bleeding patterns and management of abnormal uterine bleeding in non-pregnant women: a cross-sectional study. Int J ReprodContraceptObstet Gynecol. 2024;13(1):59-65.
24. Alshdaifat EH, El-Deen Al-Horani SS, Al-Sous MM, Al-Horani S, 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):204-213.
25. GeethaMala K. Study of histopathological array of endometrium in abnormal uterine bleeding: our hospital experience. J Community ClinPract. 2025.
26. Karimi M, Alizadeh A, Mahmoodi M. Clinicopathological pattern of endometrial specimens in women with abnormal uterine bleeding and ultrasonography correlation. Arch Iran Med. 2024;27(4):216-222.
27. Suneja P, Saldanha P. Histopathological study of endometrium in abnormal uterine bleeding with expression of oestrogen and progesterone receptors. New Indian J OBGYN. 2024;10(2):274-280.