Section: Pathology

Original Research Article

HISTOPATHOLOGICAL SPECTRUM OF ENDOMETRIAL PATHOLOGY IN PATEINTS WITH ABNORMAL UTERINE BLEEDING AT A RURAL HOSPITAL

Pawale Poonam Prataprao[1], Sushmita H.[2], Sheela Narsinha Kulkarni[3]

[1]*Associate Professor, Department of Pathology, MIMSR, Vishwanathpuram, Latur, Maharashtra, India.*
[2]*Assistant Professor, Department of Pathology, MIMSR, Vishwanathpuram, Latur, Maharashtra, India.*
[3]*Professor & HOD, Department of Pathology, MIMSR, Vishwanathpuram, Latur, Maharashtra, India.*

Received *: 02/07/2026*
Received in revised form *: 26/07/2026*
Accepted *: 09/08/2026*

Corresponding Author:
Dr. Sushmita H,
Assistant Professor, Department of Pathology, MIMSR, Vishwanathpuram, Latur, Maharashtra, India.
Email: sushmita.rk123@gmail.com

DOI: 10.70034/ijmedph.2026.4.184

Source of Support: Nil,
Conflict of Interest: None declared

Int J Med Pub Health
2026; 16 (4); 1211-1216

ABSTRACT

Background: Abnormal uterine bleeding (AUB) is one of the most common gynecological complaints encountered in women of all age groups and significantly impacts quality of life. Histopathological examination of the endometrium remains the gold standard for evaluating its underlying causes and directing management. The objective is to study the histopathological spectrum of endometrial lesions in patients presenting with abnormal uterine bleeding and study their age distribution.

Materials and Methods: This is a retrospective study conducted in the Department of Pathology, MIMSR Medical College, Latur, over a period of 3 years from Sept 2022 to Sept 2025.The study included hysterectomy along with endometrial biopsy and curettage specimens obtained from patients presenting with AUB. Samples were fixed in 10% formalin, processed routinely, and stained with hematoxylin and eosin. The histopathological findings were analyzed and classified according to age groups.

Results: A total of 136 cases were studied. The majority of cases were seen in the perimenopausal age group (41–50 years, 51.4%). Mean age was 45.2 years. Normal Cyclical endometrium was the most predominant histopathological pattern constituting 65 (47.7%) cases with proliferative being 48(35.2%) and secretory 17(12.5%). Next most common pathology was Endometrial hyperplasia with and without atypia with 26 (19.1%) cases. Other pathologies found were disordered proliferative endometrium (13.9%), Endometrial polyp (5.8%), Atrophic endometrium (5.1%), Endometrium with exogenous hormonal effects (2.9%) and chronic endometritis (2.2%). Endometrial carcinoma was identified in 4(2.2%) cases, predominantly in women> 50 years of age. It has been observed that, there was highly significant association between age group and histopathological diagnosis ($p<0.01$).

Conclusion: The histopathological spectrum of AUB varies with age, with benign proliferative and hyperplastic changes being common in women < 50 years of age, and malignancy more prevalent in women > 50 years of age. Histopathological examination remains an indispensable diagnostic tool for identifying underlying pathology in AUB.

Keywords: AUB, Pathology.

INTRODUCTION

Endometrial pathology has become a predominant problemfaced by women globally.[1]

Among the endometrial pathology, abnormal uterine bleeding is preponderantin developing countries.[2] Prevalence of AUB in women between menarche and menopause is around 9 – 14%. The reported prevalence of AUB in India is around 17.9%.[3] AUB is defined as a bleeding pattern that differs in frequency, duration and amount from a pattern observed during a normal menstrual cycle or after menopause.[4] It presents asmenorrhagia,

polymenorrhea, metrorrhagia or menometrorrhagia.[5]

Heavy bleeding may affect a woman's health both medically and socially, causing problems such as iron deficiency in the developed world and chronic illness in the developing world.[6]

A new nomenclature system known by the acronym PALM-COIEN (Polyp; Adenomyosis; Coagulopathy; ovulatory disorders; endometrial factors; iatrogenic; and not classified) was introduced in 2011 by the International Federation of Gynecology and Obstetrics (FIGO) to standardize the terminologies of AUB. The PALM-COIEN system is etiopathogenesis based with PALM describing structural causes and COIEN denoting nonstructural causes of AUB. Hence, FIGO nomenclature system will allow the standardization and uniformity while conducting future studies and can rectify the problem of inconsistency in AUB management.[7]

Histopathological examination of endometrial biopsies is gold standard diagnostic tool in evaluation of AUB and a specific diagnosis helps to plan the therapy for successful, resourceful management of AUB, where hysterectomy is not the answer, it is the interplay of hormones.[8]

MATERIALS AND METHODS

This is a retrospective study conducted in the Department of Pathology, MIMSR Medical College, Latur, over a period of 3 years from Sept 2022 to Sept 2025.Total 136 specimens were studied.

Inclusion Criteria

Patients presenting with AUB, irrespective of age and parity, with endometrial samples obtained by curettage, biopsy, or hysterectomy.

Exclusion Criteria

Patients with bleeding due to systemic disorders (e.g., coagulation defects, thyroid disorders, pregnancy related complications) and patients with structural causes including leiomyoma, cervical and vaginal pathologies were excluded from study.

Methodolgy

Among136 specimens obtained for histopathological examination, 122samples (82.3%) were hysterectomy specimens,14 (17.7%) were obtained from endometrial curettage and endometrial biopsy.All the specimens were transported in 10% formalin to the pathology laboratory. The tissue bits were processed in LEICA automatic tissue processor and paraffin blocks were prepared. Tissue sections were cut (4-6 microns) and stained with hematoxylin and eosin stain and evaluated under light microscope. Histopathological examination of endometrial samplings were done.The histopathological findings of AUB were categorized into functional and organic causesas per World Health Organization (WHO) Classification of Female Genital Tumours, fifth edition, and Blaustein's Pathology of the Female Genital Tract, seventh edition (9,10).The functional causes of AUB in this study were normal cyclical endometrium (proliferative and secretory phases) and other abnormal changes in the endometrium like atrophic endometrium, disordered proliferative endometrium, deficient secretory phase and irregular shedding. Organic intrauterine lesions which were the cause of AUB in this study include chronic endometritis, endometrial hyperplasia, benign endometrial polyp, endometrial carcinoma and endometrial stromal nodule. Histopathological diagnosis was categorized into proliferative, secretory, disordered proliferative, hyperplasia (with and without atypia), endometrial polyp, atrophic endometrium, Endometritis and endometrial carcinoma. The data were collected and analysed using the statistical software, SPSS version 22.0. Socio demographic data and diagnostic characteristics were expressed as numbers and percentage. The results were expressed as the mean ± Standard Deviation (SD).

RESULTS

According to the inclusion criteria, the 136 women's medical data, clinical information and endometrial histopathology findings were evaluated. The age of patient ranged from 29-68 years. Mean age of women presented with AUB in our study was 45.2 years. Maximum number of patients i.e.70 (51.4%) were in theage group of 41-50 years followed by 51 patients (37.5%) in the age group of 21-40 years.Distribution of cases according to age group is shown in [Table 1].

Table 1: Distribution of cases according to age group (N=136)

Age group (Years)	No. of patients	Percentage
21-30	03	2.2%
31-40	48	35.2%
41-50	70	51.4%
50-60	12	8.8%
60-70	03	2.2%
Total	136	100

Table 2: Distribution of cases of AUB according to cause

Cause of AUB	No. of patients(n=136)	Percentage
Functional Cause	91	66.9%
Organic cause	45	33.1%
Total	136	100%

A total of 136 patients presented with AUB were analyzed. Out of 136 patients, 91(66.9%) were due to functional causes as no organic pathology was found, while 45 (33.1%) cases showed definite endometrial pathology [Table 2]. Out of 91 functional causes of AUB, proliferative endometrium with 48 (52.7%) cases was most common pattern. Out of 45 organic causes, endometrial hyperplasia 47(62.7%) was most common.

Table 3: Distribution of cases of AUB according to histological pattern

Histological diagnosis	Total no. of cases (n=136)	Percentage (%)
Proliferative phase	48	35.2
Secretory phase	17	12.5
Atrophic	07	5.1
Disordered proliferative endometrium	19	13.9
Endometrium	4	2.9
Chronic Endometritis	3	2.2
Endometrialpolyp	8	5.8
Endometrial hyperplasia Without atypia	23	16.9
Endometrial hyperplasia Withatypia	03	2.2
Endometrial carcinoma	04	7.3
Total	136	100

Histopathological examination revealed various patterns in AUB as illustrated [Table 3]. Normal cyclical pattern: proliferative and secretory phases [Figure 1 & 2] were the most common and seen in 65 (47.7%) patients. Endometrial hyperplasia and disordered proliferative endometrium [Figure 1] were the next common histological patterns seen in 26 (19.1%) and 19 (13.9%)cases respectively.Out of the 26 cases of endometrial hyperplasia, 23 cases were of hyperplasia without atypia and 3 cases of hyperplasia with atypia [Figure 2]. Atrophic endometrium [Figure 6] was seen in 07 (5.1%) cases, endometrial polyp [Figure 7] in 8 (5.8%) cases and endometrial carcinoma 4 (7.3%) cases. Out of 4 cases of endometrial carcinoma, 2 cases were well differentiated endometroid adenocarcinoma [Figure 3] and one was moderately differentiated endometroid adenocarcinoma. One of the cases was of Villoglandular variant of well differentiated endometrioid adenocarcinoma [Figure 4].

Table 4: Distribution of cases as per age group was illustrated

Histological diagnosis	Age group(years)				
	21-30	31-40	41-50	>50	Total
Proliferative Phase	2 (4.1%)	20(41.6%)	23(47.9%)	3 (6.2%)	48
Secretory Phase	1 (5.8%)	8(47.05%)	8(47.1%)	-	17
Atrophic	-	-	3 (42.8%)	4 (57.14%)	07
Disordered proliferative endometrium	-	6(31.57%)	12 (63.1%)	1 (5.2%)	19
Endometrium with exogenous hormones	-	2(50%)	2(50%)	-	4
Chronic end metritis	-	-	2 (66.6%)	1(33.3%)	3
Endometrial polyp	-	2 (25%)	5(62.5%)	1 (12.5%)	8
Endometrial hyperplasia without atypia		10(43.4%)	12 (52.2%)	1 (4.3%)	23
Endometrial hyperplasia with atypia	-		2 (66.6%)	1 (33.3%)	3
Endometrial Carcinoma	-	-	1(25%)	3(75%)	4
Total	3	48	70	15	136

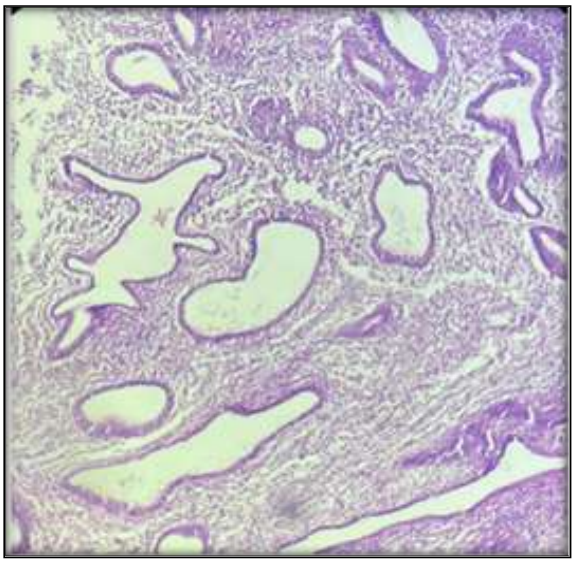


Figure 1: Disordered Proliferative Phase(H&E 10x)

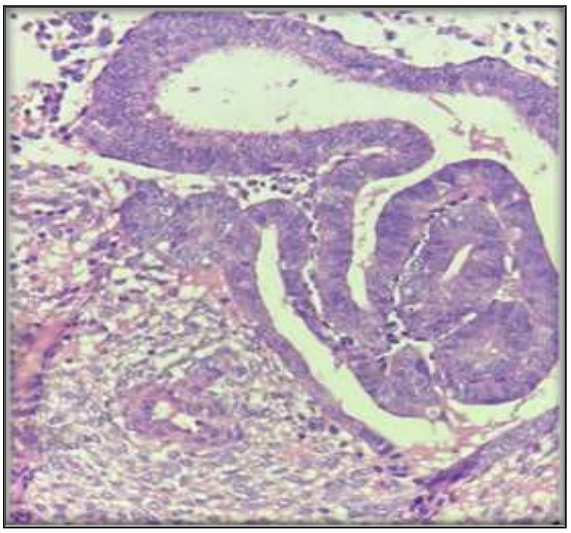


Figure 2: Endometrial Hyperplasia with Atypia(H&E 40x)

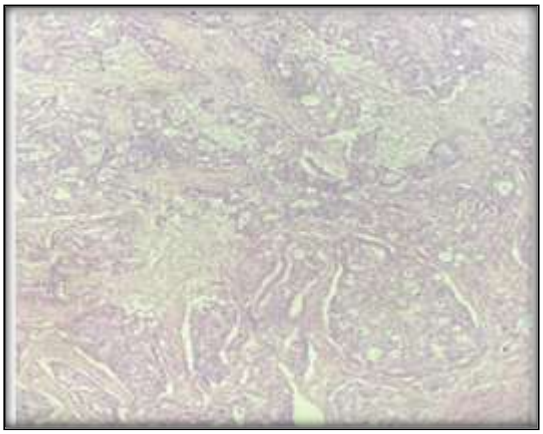


Figure 3: Endometrial Adenocarcinoma (H&E 10x)

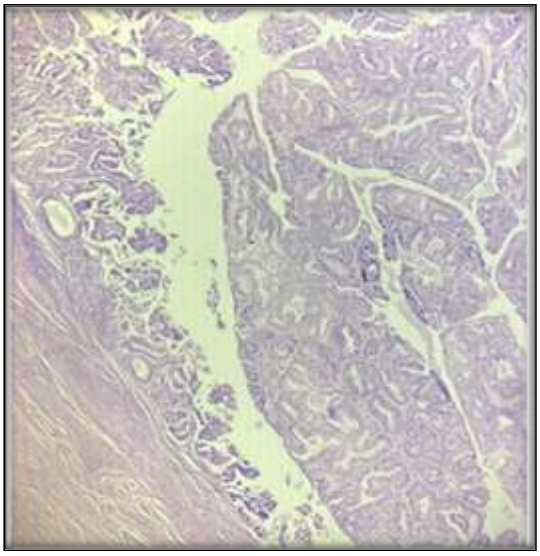


Figure 4: Endometrial Carcinoma (Villoglandular variant) (H&E 10x)

In this study, there was highly significant association between age group and histopathological diagnosis ($p<0.01$). Proliferative pattern was predominantly found in age group of 41-50 years with 23 (59.3%) patients. Secretory phase was most commonly found in age group of 31-40 and 41-50 yrs with 8 cases each. Atrophic endometrium was found predominantly in age group of > 50 yrs. Disordered proliferative endometrium was seen most commonly in 41-50 years with 12cases.Endometrial hyperplasia with and without atypia was most commonly seen in age bracket of 41-50 years with total 14 cases. Out of 4 cases of Endometrial carcinoma 3 were in the age group of >50 years.

DISCUSSION

AUB is the most frequently presenting complaint among gynaecology out patients and amounts to 25 to 35% of gynaecology cases.[11] Endometrium is mirror of hormonal status in women. The pathophysiology of AUB reflects the intricate interplay between endocrine, immune, and vascular systems in the endometrium, where disruptions in these mechanisms can lead to irregularities in menstrual bleeding. Normal menstruation involves progesterone withdrawal at the end of the menstrual cycle, triggering a well-coordinated cascade of endometrial changes. These include epithelial and stromal apoptosis, inflammatory mediator release, and matrix metalloproteinase activation, which facilitate endometrial shedding and subsequent repair. Effective hemostasis requires spiral arteriole constriction, clot formation, and tissue regeneration. In individuals with AUB, these processes are dysregulated, leading to excessive or irregular bleeding.[12,13] The histopathological reporting of endometrium is highly
subjective and of great challenge due to its dynamiccyclical changes and spectrum of histomorphological pattern in response to hormones. The pathologist playsa significant role in early detection of endometrialprecursor lesions and exclusion of malignancy

In our study, the most common age group presenting with AUB was 41-50 years. Similar observations were also made by S. Vaidya et al, Agrawal et al, Doraiswami et al, Jairajpuri ZS et al.[14-17]

Our study like several others showed that proliferative lesions like disordered proliferative pattern, hyperplasia, and benign endometrial polyp occur more commonly in the age group 41–50 years.[18].The reason for increased incidence of abnormal uterine bleeding in this age group (41–50 years) may be due to the factthat these patients are in their climacteric period. AUB may be an early sign of ovarian insufficiency; follicles are still developing but, despite increasing levels of follicle-stimulating hormone (FSH), do not produce enough estrogen to trigger ovulation which cant keep the normal thickness of endometrium.[19] The mean age of women presented with AUB in our study was 45.2years, which was comparable to 43 years by S. Vaidya et al & 41 years by Agrawal et al.[14,15]

Incidence of functional cause of AUB in our study was 66.9% which was comparable to Ara &Roohi,[20] 62.1%, Muzaffar et al,[21] 61%, Abdullah LS.[22] 61.5%. Incidence of organic cause of AUB in our study was 33.1% which was higher than data published by S. Vaidya et al 19%.[14]

In the present study, the most common pattern was normal cyclical endometrium: Proliferative (35.2%) and secretory (12.5%), total amounting to 47.7%.Incidence of proliferative endoometrium is in very much alliance with a study by Dangal G (38.5%).[22] and study by Sheeja et al (38.7%).[23] .Bleeding in the proliferative phase may be due to anovulatory cycle causing progressive rise of estrogen to comparatively high levels, followed by a sudden fall in estrogen due to feedback inhibition of pituitary or of FSH secretion and bleeding results.

In the present study secretory phase was found in 12.5% cases. Which is comparable to study by Bhatta et al,[3] and slightly lower as comparedto study by Jairajpuri et al,[17] Bleeding in the secretory phase is due to ovulatory dysfunction. This ovulatory bleeding is explained by the inability of the corpus

luteum to synthesize adequate amount of progesterone, although it remains active throughout the entire period of 12-14 days. The exact aetiology of ovulatory bleeding can be further clarified by daily serum progesterone assay.[24]

Incidence of Atrophic endometrium was low i.e.5.1% which is comparable to other studies.[3,23] The exact cause of bleeding from the atrophic endometrium is not known. It is postulated to be due to anatomic vascular variations or local abnormal hemostatic mechanisms. Thin walled veins, superficial to the expanding cystic glands make the vessel vulnerable to injury.

A significant number of cases showed disordered proliferative pattern in this study. i.e 19 (13.9%) cases. Disordered proliferative pattern lies at one end of the spectrum of proliferative lesions of the endometrium that includes carcinoma at the other end with intervening stages of hyperplasias. The term''disordered proliferative endometrium'' has been used in a number of ways and is somewhat difficult to define. It denotes an endometrial appearance that is hyperplastic but without an increase in endometrial volume.[25]

Percentage of Disordered proliferative endometrium in our study is comparable to study by Swati et al (13.7%).[27]. While in certain other studies its incidence varies from 5.7% to 20.54%.[16,17,26]

Similar to other studies,[16,26] it was more common in the 41-50 years of age group. Disordered proliferative endometrium is common in the perimenopausal years because of anovulatory cycles.[27,28].

Endometrial hyperplasia, an important cause of AUB, is defined as an increased proliferation of the endometrial glands relative to the stroma, resulting in an increased gland-to-stroma ratio. The underlying cause of these hyperplasias is a relative predominance of estrogen combined with insufficient progesterone levels. Typical causes include corpus luteum insufficiency/anovulatory cycles (premenopause), polycystic ovary syndrome and obesity with metabolic syndrome (aromatase conversion of ovarian androgens in adipose tissue).[29].

In its latest classification published in 2014, the WHO has classified Endometrial Hyperplasia in to 2 categories.[30]

1. Hyperplasia without atypia
2. Atypical hyperplasia/Endometrioid intraepithelial neoplasia

It is said to be a precursor of endometrial carcinoma.[14] Studies suggest that approximately 20–50% untreated cases of Endometrial atypical hyperplasia progress to Endometrial carcinoma, specifically type I endometrioid adenocarcinoma.[31,32]

In our study, endometrial hyperplasia without atypia was observed in 23(16.9%) and endometrial hyperplasia with atypia was observed in 3(2.2%)cases. Literature reports quite variable incidence of endometrial hyperplasia. Sheeja et al,[23] found it to be 5.9%, Vaidya et al,[14] reports it to be 10.9%. A rather higher incidence(22.2%) is reported by Swati et al,[27] and Bhatta et al (18%).[5]. Hyperplasia with atypia has considerable morphologic overlap with well-differentiated endometrioid adenocarcinoma, and an accurate distinction between hyperplasia with atypia and cancer may not be possible. This underscores the importance of histopathological examination in detecting etiology of AUB in women to guide the treatment.

The incidence of benign endometrial polyps in this study was 5.8% and was high in 41–50 years age group. Lower incidence of the endometrial polyps in the younger age group may be attributed to a possible spontaneous regression mechanism, which is characteristic of the cycling endometrium in reproductive age group. There is significant difference between the endometrial polyp and normal endometrium in receptor expression, cell proliferation and apoptosis regulation. These differences combined with non-random chromosomal aberrations and monoclonality suggest that polyp may provide a suitable microenvironment for the development of malignancy. Literature reveals variable incidence of endometrial polyps ranging from 1.7%,[17] 8%,[27] to 10.7 % and 11%.[10,16].

Incidence of endometrium with exogenous hormones in our study was 2.9 % which correlates with other studies having incidence of 1.7%.[17] and 2.3%.[21]. All 4 cases presented in the 31-50 age bracket.

Least in incidence was chronic endometritis (2.2%)concurring with the reported incidence of 2.6% by Rupal shah et al.[34] and 2.4% by Mune SB et al.[27] All 3 cases were in women above 40 years similar to study by Damle et al.[24].

Incidence of Endometrial Carcinoma in our study was 2.2% with 4 cases; which is comparable to Vaidya et al (2.4%).[14] and Swati et al (2.3%).[27].Ara and Roohi reports 1.8%.[20] Sheeja et al reports 1.3%.[23] Few lower incidences by Jairazpuri (0.47%) and khan et al (0.4%).[35] along with few higher incidences of 4.4% and 5.7% by Doraiswami et al.[16] and Bhatta et al.[5]. Out of 4 cases 3 were >50 years age group which correlates with many studies like study by Damle et al,[24] sheeja et al,[23] and Jairazpuri et al.[17].

CONCLUSION

Endometrial cause of abnormal uterine bleeding is age related pathology. Normal cyclical pattern was the predominant histopatholoical pattern followed by Endometrial Hyperplasia. Normal cyclical endometrium was predominantly found in 31-50 years age group. Incidence of endometrial hyperplasia, disordered proliferative endometrium & endometrial polyp was high in 41-50 years of age group. The incidence of endometrial carcinoma was high after 50 years of age. Histopathological

examination of endometrium is gold standard diagnostic tool in evaluation of abnormal uterine bleeding and detecting preneoplastic lesions, which helps us to plan &individualise therapy for successful, resourceful management of abnormal uterine bleeding.

REFERENCES

1. Sarwar A, Haque A. Types and frequencies of pathologies in endometrialcurettings of abnormal uterine bleeding. Int J Pathol.2018;3(2):65–71.
2. Harlow SD, Campbell OMR. Epidemiology of menstrual disorders in developing countries: a systematic review. BJOG. 2004;111(1):6–16. doi:10.1111/j.1471-0528.2004.00012.x.
3. Bhatta, S., & Sinha, A.. Histopathological study of endometrium in abnormal uterine bleeding. Journal of Pathology of Nepal, 2012;2(4), 297–300.
4. Ely JW, Kennedy CM, Clark EC, Bowdler NC. Abnormal Uterine Bleeding: A Management Algorithm. J Amer Board Fam Med 2006;19:590-60
5. Talukdar B, Mahela S. Abnormal uterine bleeding in perimenopausal women: Correlation with sonographic findings and histopathological examination of hysterectomy specimens. J Midlife Health. 2016;7(2):73–7. doi:10.4103/0976-7800.185336.
6. Elizabeth Farrell. Dysfunctional Uterine Bleeding, Australian Family Physical, 2004;33(11):906-908.
7. Sharma A, Dogra Y. Trends of AUB in tertiary centre of Shimla hills. J Midlife Health. 2013;4(1):67-68.
8. Parmar J, Desai D. Study of endometrial pathology in abnormal uterine bleeding. Int J ReprodContraceptObstetGynecol2013;2:182-185.
9. World Health Organization (WHO) Classification of Tumours of Female Genital Tumours, fifth edition,
10. Blaustein's Pathology of the Female Genital Tract, seventh edition
11. Padubidri VG, Daftary SN. Shaw's textbook of gynaecology. Reed Elsevier India Private Limited. 2014. Available from: https://shop.elsevier.com/books/ shaws-textbook-of-gynecology/padubidri/978-81-312 3672-7.
12. Leal CRV, Vannuccini S, Jain V, Dolmans MM, Di SpiezioSardo A, Al-Hendy A, Reis FM. Abnormal uterine bleeding: The well-known and the hidden face. J Endometr Uterine Disord. 2024 Jun;6 [PMC free article] [PubMed]
13. Jain V, Munro MG, Critchley HOD. Contemporary evaluation of women and girls with abnormal uterine bleeding: FIGO Systems 1 and 2. Int J Gynaecol Obstet. 2023 Aug;162Suppl 2(Suppl 2):29-42. [PMC free article] [PubMed]
14. S Vaidya, M Lakhey, S Amatya et al. Histopathological pattern of abnormal uterine bleeding in endometrial biopsies. Nepal Med Coll J 2013;15(1):74-77.
15. Shweta Agrawal, Asha Mathur and KusumVaishnav. Histopathological study of endometrium in abnormal uterine bleeding in women of all age groups in western rajasthan (400 cases). Int J of Basic & Applied Med Sci 2014;4(3):15-18.
16. Doraiswami S, Johnson T, Rao S et al. Study of Endometrial Pathology in Abnormal Uterine Bleeding. J ObstetGynecol India 2011;61:426-430.
17. Jairajpuri ZS, Rana S, Jetley S. Atypical uterine bleeding Histopathological audit of endometrium - A study of 638 cases. Al Ameen J Med Sci 2013;6(1):21-28.
18. Steven SG. Problems in the differential diagnosis of endometrial hyperplasia and carcinoma. Mod Pathol. 2000;13:309–27.
19. ByJoAnn V. Pinkerton, MD, University of Virginia Health System Abnormal Uterine Bleedinghttps://www.msdmanuals.com/professional/gynecology-and-obstetrics/menstrual-abnormalities/abnormal-uterine-bleeding
20. Ara S and Roohi M. Abnormal uterine bleeding; histopathological diagnosis by conventional dilatation and curettage. Professional Medical Journal 2011;18(4):587-591.
21. Muzaffar M, Akhtar KA, Yasmin S et al. Menstrual Irregularities with excessive blood loss: a clinico-pathological correlation. J Pak Med Assoc 2005;55:486-489.
22. Dangal G. A study of endometrium in patients with abnormal uterine bleeding at Chitwan valley. Kathmandu University Medical Journal. 2003;1(2):110-12. [PubMed] [Google Scholar]
23. Sheeja J, Begum R. Histopathological evaluation of endometrial curettings in women with abnormal uterine bleeding: A retrospective analysis [Internet]. IP Arch CytolHistopathol Res. 2022 [cited 2025 Nov 22];7(3):177-182. Available from: https://doi.org/10.18231/j.achr.2022.038
24. Rajshri P. Damle et al, Clinicopathological Spectrum of Endometrial Changes in Peri-menopausal and Post menopausal Abnormal Uterine Bleeding: A 2 Years Study. Journal of Clinical and Diagnostic Research. 2013 Dec, Vol-7(12):2774-2776.
25. Steven SG. Problems in the differential diagnosis of endometrial hyperplasia and carcinoma. Mod Pathol. 2000;13:309–27.
26. Abdullah LS, Bondagji NS. Histopathological pattern of endometrial sampling performed for abnormal uterine bleeding. Bahrain Med Bull 2011;33(4):1-6.
27. Mune SB, Karche AG. Histopathological patterns of endometrial lesions in patients with abnormal uterine Bleeding in rural area of Western Maharashtra [Internet]. Indian J PatholOncol. 2016 [cited 2025 Nov 27];3(4):665-672. Available from: https://doi.org/
28. McCluggage WG. My approach to the interpretation of endometrial biopsies and curettings. J ClinPathol. 2006 Aug;59(8):801-12.[pubmed]
29. Kommission Uterus der ArbeitsgemeinschaftGynäkologischeOnkologiee.V. .München: W. ZuckschwerdtVerlag; 2008. Interdisziplinäre S2k-Leitlinie für die Diagnostik und Therapie des Endometriumkarzinoms; pp. 73–126. [Google Scholar]
30. Zaino R, Carinelli S G, Ellenson L H, Lyon: WHO Press; 2014. Tumours of the uterine Corpus: epithelial Tumours and Precursors; pp. 125–126. [Google Scholar][Ref list]
31. Lacey J.V., Jr., Sherman M.E., Rush B.B., Ronnett B.M., Ioffe O.B., Duggan M.A., Glass 29.A.G., Richesson D.A., Chatterjee N., Langholz B. Absolute Risk of Endometrial Carcinoma during 20-Year Follow-up among Women with Endometrial Hyperplasia. J. Clin. Oncol. 2010;28:788–792. doi: 10.1200/JCO.2009.24.1315. [DOI] [PMC free article] [PubMed] [Google Scholar]
32. Giannella L., Grelloni C., Bernardi M., Cicoli C., Lavezzo F., Sartini G., Natalini L., Bordini M., Petrini M., Petrucci J., et al. Atypical Endometrial Hyperplasia and Concurrent Cancer: A Comprehensive Overview on a Challenging Clinical Condition. Cancers. 2024;16:914. doi: 10.3390/cancers16050914. [DOI] [PMC free article] [PubMed] [Google Scholar]
33. Hileeto D, Fadare O, Martel M, et al. Age dependent association of endometrial polyps with increased risk of cancer involvement.World J SurgOncol. 2005;3:8.
34. Shah RJ, Dayal A, Kothari SL, Patel SM, Dalal B. Histopathological interpretation of endometrium in abnormal uterine bleeding. Int J Med Sci Public Health 2014;3:452-456
35. Khan S, Hameed S, Umber A. Histopathological pattern of endometrium on diagnostic d&c in patients with abnormal uterine bleeding. Annals 2011;17:166-170