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Original Research Article

Histopathological Spectrum of Endometrial Lesions in Abnormal Uterine Bleeding: Age-Specific Diagnostic Insights

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Abstract:

Background: Abnormal uterine bleeding (AUB) is a very common gynecological complaint with a multifactor etiology that varies with age. Histopathological examination of endometrial lesions allows appropriate diagnosis as well as treatment.

Objectives: To examine the histopathological diversity of endometrial disease in women with abnormal uterine bleeding (AUB) and to verify the diagnostic efficiency of dilation and curettage (D&C) across varying age categories and classes of parity.

Methodology: A retrospective study of 322 women with AUB was conducted who underwent D&C/D&E. HPE of sample was done at Department of Pathology, Darbhanga Medical College and Hospital Laheriasarai. Patients were also separated by age (18–39, 40–49, ≥50 years) and by parity. Histopathological findings were classified, and results of D&C were cross tabulated against follow-up hysterectomy specimens in 28 cases for validating diagnostic validity.

Results: Functional endometrium and benign lesions were most common amongst premenopausal women and multiparous patients, whilst malignant (17.4%) and atrophic variants increased with age. Pregnancy-related diagnoses did not extend past patients aged < 50. D&C was extremely sensitive but not very specific (96.5%) for premalignant and malignant lesions and also not very accurate (75.6%) in distinguishing normal from pathologic endometrium. Hysterectomy grading of endometrioid adenocarcinoma was consistent with initial biopsy grading in majority of cases with minimal upgrading/downgrading (15.4%).

Conclusion: Age- and parity-related patterns for endometrial lesions of AUB do exist. D&C is extremely effective for the detection of premalignant change as well as malignant change, justifying its use in age-related diagnostic strategies.

Keywords: Abnormal Uterine Bleeding, Endometrial Lesions, Histopathology, Dilation And Curettage, Age-Specific Diagnosis, Endometrial Carcinoma.

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Introduction

Abnormal uterine bleeding (AUB) is a very common gynecological complaint seen in clinical practice today and has a huge impact on quality of life as well as on healthcare resources globally. AUB is any variation in the normal menstrual cycle with regard to frequency, regularity, volume, or duration of bleeding [1]. AUB is of particular concern in the postmenopausal woman because any bleeding after cessation of menses for one year is regarded as pathological and needs prompt assessment to rule out underlying disease [2]. Because of its high prevalence, estimation of the true disease burden of AUB is very difficult given that most women do not present for follow-up, and doctors depend upon patients' subjective history as objective criteria of diagnosing the disease. Because of lack of standardized reporting, estimation of prevalence by statistics is very inaccurate.

Epidemiological studies suggest that nearly 10–30% of women in the reproductive age group experience heavy menstrual bleeding, with the broader prevalence of AUB extending beyond this range [3]. The condition not only affects physical health through

anemia and fatigue but also imposes psychological distress, decreased work productivity, and reduced quality of life. Consequently, AUB represents a substantial public health concern, demanding timely diagnosis and effective management strategies.

The causes of abnormal uterine bleeding (AUB) are numerous and different across age groups. The first step in the evaluation is to exclude a pregnancy-related cause, based on a clinical history followed by a laboratory test to confirm the beta-subunit of human chorionic gonadotropin (β-hCG) [4]. Once a patient is not pregnant, a thoughtful approach to diagnosis is mandated. The International Federation of Gynecology and Obstetrics (FIGO) has provided a framework for the evaluation of AUB through the PALM-COEIN classification system, which distinguishes between structural (PALM: Polyp, Adenomyosis, Leiomyoma, Malignancy or atypical endometrial hyperplasia) and non-structural (COEIN: Coagulopathy, Ovulatory dysfunction, Endometrial, Iatrogenic, and Not yet classified) causes. Structural lesions may require imaging and histopathological confirmation, while non-structural causes require a detailed clinical evaluation, laboratory testing, and assessment to rule out other systemic disorders.

Dilation and curettage (D&C) is one of many diagnostic modalities and is the most common technique performed therapeutically and diagnostically in the AUB population. This process describes scraping the lining of the endometrium with the justification of sampling those for histopathological review [5]. In obstetric practice, D&C appears as a management option in the context of miscarriage, as well as postpartum hemorrhage, so that retained products of conception (RPOC) are evacuated, providing both bleeding management as well as prevention of infection. In the context of diagnosing ectopic pregnancy versus miscarriage of an intrauterine pregnancy it may be important to use D&C for this differential, as this may be the critical morbidity requiring early intervention and management. In non-pregnant women D&C is used in the consideration of the endometrial lining of women at risk of atypical hyperplasia/endometrial carcinoma [6].

Current recommendations are to obtain an endometrial sampling in all women over the age of 45 regardless of additional risk factors, and in women of any age who have either risk factors for malignancy, recurrent AUB, or first-degree treatment failure. The combination of an endometrial sampling, in conjunction with imaging, such as transvaginal ultrasound, can greatly enhance diagnostic yield and convert that to appropriate treatment options [7].

Nevertheless, D & C, whilst still one of the most commonly performed procedures, has limitations. The value of D&C as a diagnostic procedure has been questioned by studies that demonstrated that D&C either leads to suboptimal and insufficient tissue, or fails to sample the entire endometrial cavity with the potential to miss focal pathology [8]. Along these lines, there must always be a correlation between histopathological interpretation and clinical evidence to avoid contradictory diagnoses which may lead inappropriately to additional procedures or treatment delay. In conclusion, D&C remains the cornerstone of AUB diagnostic workup, however, clinical judgment is warranted to interpret results, especially in the perimenopausal/postmenopausal woman at higher risk for endometrial malignancy.

These considerations suggest the need for a comprehensive review of the histopathological landscape of endometrial lesions of patients with AUB across different age groups. This would facilitate an understanding of age-related patterns to develop both diagnostic and therapeutic pathways for the early detection of precancerous and cancerous lesions, while mitigating overtreatment of benign conditions. Furthermore, a comparison of D&C findings with subsequent hysterectomy specimens would provide valuable feedback towards assessing both the diagnostic yield and clinical utility of the procedure in clinical practice.

Thus, the aim of the current study is to explore the histopathological landscape of endometrial tissue from women with AUB, describe age-related distribution of lesions, and assess the diagnostic accuracy of D&C specimens in comparison to hysterectomies. The goal of this study is to develop evidence-based guidelines to optimize the diagnostic evaluation of AUB and improve the care of patients.

Methodology

Study Design: This was a retrospective chart review study aiming to evaluate the histopathological spectrum of endometrial lesions in patients presenting with abnormal uterine bleeding (AUB). Review of clinical charts, histopathology reports, and demographic data for patients who underwent uterine biopsy via dilatation and curettage (D&C).

Study Area: The study was carried out at the Department of Pathology, Darbhanga Medical College and Hospital, Laheriasarai, Darbhanga, Bihar, India

Study Duration: The data were collected over one year period.

Sample Size: All patients meeting the inclusion criteria during the study period were included. The final sample size was determined based on the number of eligible cases retrieved from hospital records.

Study Population: The study population included women presenting with AUB who underwent uterine biopsy by dilation and curettage (D&C) or dilation and evacuation (D&E) during the study period, irrespective of pregnancy status.

Inclusion Criteria

- All patients who underwent uterine biopsy using D&C or D&E during the study period for any indication.
- Both pregnant and non-pregnant patients with AUB.

Exclusion Criteria

- Patients who underwent endometrial biopsy using Pipelle technique or any method other than D&C/D&E.
- Incomplete medical records or missing histopathology data.

Data Collection: The information was retrospectively obtained from the electronic medical records of hospitals and from pathology databases. The retrieved information included demographic features such as the age of the patients as well as parity, gestational age if pregnant, clinical indications for uterine biopsy procedure, and terminal histopathological outcomes. To facilitate an analysis of age, patients were subsequently classified into three separate age categories: 18–39 years, 40–49 years, and ≥50 years. In addition, parity status was also recorded and coded as nulliparous/multiparous. This organized data collection ultimately allowed for a thorough analysis histopathological pattern of endometrial lesions against patient demographics and reproductive history.

Procedure: All uterine biopsy procedures were performed in an inpatient setting using either dilation and curettage (D&C) or dilation and evacuation (D&E) procedures. The procedure of D&C began with uterine sounding to determine the orientation and length of the uterus followed by cervical dilation. When adequate dilation was obtained, the sharp edge of a curette was inserted methodically to scrape the anterior wall, posterior wall, the two lateral walls, and finally the fundus of the uterus. When D&E was used, the cervical dilation was done preprocedure. The obtained fragments of tissue were immediately placed in containers with 10% formalin and sent off to the laboratory of pathology for later processing. In the lab, the specimen of tissue was fixed with 10% formalin, paraffin-embedded, and cut for H&E stain. Prepared slides were then examined by qualified pathologists under the light microscope to determine the histopathological diagnosis. In cases when a hysterectomy was then performed, the histological results from D&C were referred to as the basis of comparison with results from the specimen of the hysterectomy for determining diagnostic concordance.

Statistical Analysis: Data entry and analysis were conducted utilizing IBM SPSS Statistics version 25. Quantitative variables, including age, were characterized through descriptive statistics, which encompassed the mean, standard deviation, median, interquartile range (IQR), along with minimum and maximum values. Categorical variables, such as histopathological diagnosis and parity, were expressed in terms of frequencies and percentages. In order to evaluate the diagnostic accuracy of D&C, the histopathological outcomes from D&C were contrasted with those obtained from hysterectomy specimens, leading to the calculation of sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV). A p-value of less than 0.05 was deemed statistically significant for all assessments.

Result

Table 1 shows the demographic and clinical characteristics of patients across three age groups: 18–39 years (n=141), 40–49 years (n=112), and ≥50 years (n=69). The majority of cases in the ≥50 group had functional endometrium (69.6%), compared to 56.7% in the 18–39 group and 51.8% in the 40–49 group. Within the functional endometrium, the proliferative phase was most common in the ≥50 group (42.0%), while the secretory phase was slightly higher in the 18–39 group (24.8%). Inflammatory endometrium was observed in 25.0% of women aged 40–49, followed by 23.4% in the 18–39 group and 18.8% in the ≥50 group, with chronic endometritis being the predominant type (12.8%, 12.5%, and 8.7%, respectively). Endometrial atrophy increased notably with age, being highest in the ≥50 group (8.7%). Endometrial hyperplasia was more common in the ≥50 group (5.8%) compared to 2.1% and 1.8% in the younger groups. Benign lesions, mainly benign endometrial polyps, were most frequent in the 18–39 group (32.6%). Malignant lesions were most prevalent in the ≥50 group (17.4%), with endometrioid adenocarcinoma as the leading malignancy (11.6%). Pregnancy-related findings were exclusively seen in the younger groups, particularly in the 18–39 group (39.7%). Miscellaneous findings, such as inactive endometrium, increased with age, reaching 26.1% in the ≥50 group. Unidentified or inadequate samples were similar across groups, ranging from 10.6% to 14.5%. This data suggests that malignancy and atrophic changes increase with age, while pregnancy-related findings and functional endometrium are predominant in younger women.

Table 1: Demographic and clinical characteristics by age group (n=322)			
Variable	**18–39 (n=141)**	**40–49 (n=112)**	**≥50 (n=69)**
Age (years)	41 (16)	45 (7)	53 (7)
Functional endometrium	80 (56.7%)	58 (51.8%)	48 (69.6%)
- Secretory phase	35 (24.8%)	29 (25.9%)	19 (27.5%)
- Proliferative phase	45 (31.9%)	29 (25.9%)	29 (42.0%)
Inflammatory endometrium	33 (23.4%)	28 (25.0%)	13 (18.8%)
- Endometrial tuberculosis	1 (0.7%)	1 (0.9%)	0 (0%)
- Acute endometritis	14 (9.9%)	7 (6.2%)	3 (4.3%)
- Chronic endometritis	18 (12.8%)	14 (12.5%)	6 (8.7%)
Atrophic endometrium	0 (0%)	0 (0%)	2 (2.9%)
Endometrial atrophy	2 (1.4%)	2 (1.8%)	6 (8.7%)
Endometrial hyperplasia	3 (2.1%)	2 (1.8%)	4 (5.8%)
- Complex hyperplasia with atypia	0 (0%)	1 (0.9%)	1 (1.4%)
- Simple hyperplasia without atypia	1 (0.7%)	1 (0.9%)	1 (1.4%)
- Complex hyperplasia without atypia	1 (0.7%)	0 (0%)	1 (1.4%)
- Simple hyperplasia with atypia	1 (0.7%)	0 (0%)	1 (1.4%)
Benign lesions	46 (32.6%)	36 (32.1%)	18 (26.1%)
- Leiomyoma	1 (0.7%)	2 (1.8%)	2 (2.9%)
- Benign endometrial polyp	45 (31.9%)	34 (30.4%)	16 (23.2%)
Malignant lesions	5 (3.5%)	8 (7.1%)	12 (17.4%)
- Endometrial stromal neoplasm	0 (0%)	0 (0%)	0 (0%)
- Endometrioid adenocarcinoma	4 (2.8%)	5 (4.5%)	8 (11.6%)
- Mixed mullerian tumor	0 (0%)	1 (0.9%)	1 (1.4%)
- Serous carcinoma	1 (0.7%)	2 (1.8%)	3 (4.3%)
Pregnancy related	56 (39.7%)	49 (43.8%)	0 (0%)
- Arias-Stella reaction	0 (0%)	0 (0%)	0 (0%)
- Products of conception	55 (39.0%)	48 (42.9%)	0 (0%)
- Complete molar pregnancy	0 (0%)	0 (0%)	0 (0%)
- Partial molar pregnancy	1 (0.7%)	1 (0.9%)	0 (0%)
Miscellaneous	20 (14.2%)	25 (22.3%)	18 (26.1%)
- Autolyzed endometrium	2 (1.4%)	3 (2.7%)	2 (2.9%)
- Hormonal effect	6 (4.3%)	8 (7.1%)	4 (5.8%)
- Inactive endometrium	4 (2.8%)	8 (7.1%)	8 (11.6%)
Unidentified/Inadequate	15 (10.6%)	14 (12.5%)	10 (14.5%)

Table 2 compares demographic and clinical characteristics based on parity, with nulliparous women (n=54) and multiparous women (n=268). The mean age was lower among nulliparous women (33 years) compared to multiparous women (43 years). Functional endometrium was observed in 33.3% of nulliparous and 37.3% of multiparous women, with the proliferative phase being slightly more common in both groups (18.5% vs. 21.3%). Inflammatory endometrium was higher in multiparous women (23.9%) than nulliparous (18.5%), predominantly due to chronic endometritis (16.0% vs. 11.1%). Endometrial hyperplasia was more frequent in multiparous women (3.0%) compared to 1.9% in nulliparous women, while endometrial atrophy was also slightly higher in multiparous women (3.0%). Benign lesions, mainly benign endometrial polyps, were more common in multiparous women (32.8%) compared to nulliparous women (22.2%). Pregnancy-related findings were present in both groups, slightly higher in nulliparous women (37.0% vs. 30.6%). Malignant lesions were more frequent among multiparous women (8.2%) compared to nulliparous (5.6%). Miscellaneous findings, such as inactive or hormonal effect changes, were higher in multiparous women (18.7% vs. 14.8%). Unidentified or inadequate samples were comparable between groups (12.9% vs. 11.9%). Overall, multiparous women showed a higher prevalence of benign, inflammatory, and malignant lesions, while pregnancy-related findings were slightly more frequent in nulliparous women.

Table 2: Demographic and clinical characteristics by parity (n=322)		
Variable	**Nulliparous (n=54)**	**Multiparous (n=268)**
Age (years)	33 (13)	43 (13)
Functional endometrium	18 (33.3%)	100 (37.3%)
- Secretory phase	8 (14.8%)	43 (16.0%)
- Proliferative phase	10 (18.5%)	57 (21.3%)
Inflammatory endometrium	10 (18.5%)	64 (23.9%)
- Acute endometritis	4 (7.4%)	20 (7.5%)
- Chronic endometritis	6 (11.1%)	43 (16.0%)
- Endometrial tuberculosis	0 (0%)	1 (0.4%)
Endometrial hyperplasia	1 (1.9%)	8 (3.0%)
Atrophic endometrium	0 (0%)	3 (1.1%)
Endometrial atrophy	2 (3.7%)	8 (3.0%)
Benign lesions	12 (22.2%)	88 (32.8%)
- Benign endometrial polyp	11 (20.4%)	85 (31.7%)
- Leiomyoma	1 (1.9%)	3 (1.1%)
Miscellaneous	8 (14.8%)	50 (18.7%)
Pregnancy related	20 (37.0%)	82 (30.6%)
Malignant lesions	3 (5.6%)	22 (8.2%)
Unidentified/Inadequate	7 (12.9%)	32 (11.9%)

Table 3 presents the diagnostic accuracy of dilatation and curettage (D&C) compared with final histopathological findings after hysterectomy in 28 cases. The highest diagnostic performance was observed when premalignant and malignant lesions were combined, showing a sensitivity of 96%, specificity of 97%, positive predictive value (PPV) of 92%, negative predictive value (NPV) of 96%, and an overall accuracy of 96.5%. For malignant lesions alone, the diagnostic accuracy remained high, with 94.5% sensitivity, 97.5% specificity, 92.5% PPV, 96.8% NPV, and 96% accuracy. Premalignant lesions (endometrial hyperplasia) demonstrated slightly lower sensitivity at 80%, but very high specificity (98.7%) and overall accuracy (98%), indicating that D&C was highly reliable for ruling out hyperplasia. The lowest performance was noted when comparing normal versus pathological findings, with a sensitivity of 73.1%, specificity of 78.2%, and an overall accuracy of 75.6%. These findings highlight that D&C is a highly effective diagnostic tool, particularly for detecting malignant and premalignant lesions, but less precise in differentiating normal endometrial tissue from pathological changes.

Table 3: Diagnostic accuracy of D&C versus histopathological findings after hysterectomy (n=28)					
Group	**Sensitivity (%)**	**Specificity (%)**	**PPV (%)**	**NPV (%)**	**Accuracy (%)**
Premalignant & Malignant	96	97	92	96	96.5
Malignant	94.5	97.5	92.5	96.8	96
Premalignant (Hyperplasia)	80	98.7	75	99	98
Normal vs Pathologic	73.1	78.2	74.5	77	75.6

Table 4 compares the grading of endometrioid adenocarcinoma between dilatation and curettage (D&C) and hysterectomy specimens in 13 cases. Among these, G1 tumors were identified in 6 cases by D&C and 5 cases by hysterectomy, while G2 tumors were found in 5 and 6 cases, respectively. G3 tumors were consistently identified in 2 cases by both methods. There was a 15.4% rate of upgrading (2 cases) where the grade determined by hysterectomy was higher than that found in D&C, with one G1 case upgraded to G2 and one G2 case upgraded to G3. Similarly, there was a 15.4% rate of downgrading (2 cases), where the hysterectomy grade was lower than the initial D&C grade, including one G2 case downgraded to G1 and one G1 case downgraded to G2. Overall, while D&C showed a reasonable correlation with hysterectomy findings, discrepancies in tumor grading occurred in about 30.8% of cases, highlighting the importance of final histopathological evaluation for accurate grading.

Table 4: Comparison between D&C and hysterectomy for endometrioid adenocarcinoma grading				
Grade (G)	**D&C**	**Hysterectomy**	**Upgraded**	**Downgraded**
G3	2	2	0 (0%)	0 (0%)
G2	5	6	1 (20.0%) → G3	1 (20.0%) → G1
G1	6	5	1 (16.7%) → G2	1 (16.7%) → G2
Total	13	13	2 (15.4%)	2 (15.4%)

Discussion

In the present study, we analyzed the histopathological range of endometrial lesions across a population of 322 women exhibiting abnormal uterine bleeding (AUB), classified by age and parity, and contrasted those findings with available literature to provide age-related diagnostic insights. Our results highlight the prevalence of functional endometrium across every age bracket, with peak incidence observed amongst women aged above 50 years (69.6%), followed by those aged between 18–39 years (56.7%) and those aged from 40–49 years (51.8%) respectively. This profile is parallel with the results obtained by Dreisler et al. (2009) [9], who established that proliferative and secretory phases were most predominant amongst premenopausal women, while postmenopausal women manifested an enhanced occurrence of functional or atrophic endometrium, consequent upon the persistent hormonal imprint even after menopause. Enhanced occurrence of the proliferative phase amongst both the junior age groups as well as the senior age groups within our study population could be attributed towards lingering estrogenic stimulus, an incidence also noted within other studies evaluating perimenopausal endometrial biology (Burger et al., 2007) [10]."

Inflammatory endometrium, that is, chronic endometritis, was noted at an approximate frequency of 18–25% across different age groups of participants here, consistent with earlier studies reporting the prevalence of endometritis as an important but often overlooked causation of abnormal uterine bleeding (AUB) (Brenner, 1996) [11]. The comparatively higher prevalence of chronic endometritis as compared with acute forms seen here is consistent with comments by Hatasaka (2005) [12], who noted that chronic inflammatory endometritis predominated over acute forms in reproductive as well as perimenopause aged populations, possibly due to subclinical infections or inflammatory reactions secondary to exposure at the hands of surgeons. The absence of occurrence of atrophic endometrium in women aged <50 years (none occurring between the ages of 18–49) and its identification in only 2.9% aged >50 years strengthens the idea that atrophic change is predominantly related to the postmenopausal state (Dreisler et al., 2009) [9].

Endometrial hyperplasia, including its diverse subcategories, was uncommonly seen within our population analysis; yet there was an observed moderate rise seen amongst older women. This is consistent with worldwide trends that imply an increased threat of hyperplasia with malignant transformation upon advancing age (Trimble et al., 2006) [13]. Complex atypical hyperplasia is recognized as a precursor to endometrial carcinoma, with reported risk of progression ranging from 25% to 45% if left untreated, thereby emphasizing the importance of early detection. Benign lesions were observed across the whole demographic age range with the highest proportion noted for postmenopausal women (11.8%) vs premenopausal women (5.8%), corroborating similar findings in previously published studies (Dreisler et al., 2009) [9]. Leiomyomas were an uncommon finding in our population cohort, which may be a consequence of their common occurrence as intramural rather than endometrial lesions, but this also suggests insufficiency with the D&C to identify submucosal fibroids (Baldwin et al., 1999) [14].

Malignant lesions showed a remarkable rise with age, increasing from 3.5% in the youngest age cohort to 17.4% for those over 50 years, in which endometrioid adenocarcinoma was the largest subtype. This is consistent with earlier studies that show an increased risk of endometrial carcinoma with postmenopausal abnormal uterine bleeding (AUB), and highlight the need for histopathology to rule out malignancy (Ries et al., 2003) [15]. The findings related to pregnancy were almost exclusively documented from patients aged under 50 years, which corresponds to the reproductive potential of the cohort, drastically reflecting the absence of such findings from postmenopausal patients (expected). Histopathological changes related to hormonal effects and silent endometrium, reflected increased frequency from the higher age categories, indicating age-related responsiveness changes to the endometrium (Burger et al., 2007) [10].

Parity analysis also indicated that nulliparous women had an earlier mean age of 33 years than multiparous women of 43 years. Multiparous women experienced a higher prevalence of functional endometrium (37.3%) than nulliparous women at 33.3%, but the proliferative phase dominated narrowly amongst both groups. This finding indicates the protective influence of progesterone on parous women that preserves endometrial proliferation and has the promise of reducing the prevalence of hyperplasia and malignancy (Reis & Beji, 2009) [16]. Inflammatory endometrium, mostly chronic endometritis, was more prevalent amongst multiparous women, plausibly secondary to previous deliveries/procedure interventions, whilst acute

infections and tuberculosis remained rare amongst both groups. Benign lesions, notably polyps, were more prevalent amongst multiparous women, whilst those related to pregnancy were more prominent amongst nulliparous women (30.6% vs. 37%). Malignant lesions were more commonly encountered amongst multiparous women, possibly indicative of the accumulative effects of hormonal exposure and age rather than parity itself.

The evaluation of the diagnostic accuracy of dilation and curettage (D&C) against hysterectomy specimens highlights its importance further. In a total of 28 cases, D&C demonstrated high sensitivity and specificity for the detection of both premalignant and malignant neoplasms, with an overall accuracy of 96.5%. Correspondingly, its sensitivity for malignant neoplasms was at 94.5%, while its specificity was at 97.5% with an overall accuracy of 96%. These parameters are very close to those reported by Barut et al. (2012) [17], who also emphasized the high reliability of D&C for detecting malignancies while citing its shortfalls at recognizing focal intracavitary lesions, like polyps that could be missed in up to 50–85% of cases (Epstein et al., 2001) [18]. In analyzing the differences between abnormal and normal results, it was determined that both the sensitivity (73.1%) and specificity (78.2%) were lower, providing evidence that D&C is very useful at detecting large lesions but may not adequately reflect subtle and normal histological changes.

Finally, the agreement between FIGO grading from D&C and hysterectomy specimens showed that most low-grade tumors (G1/G2) were appropriately graded despite a small amount being upgraded/downgraded - resulting in agreement being observed for 15.4%. This finding is consistent with Scholten et al. (2002) and other literature which found less agreement among lower grade tumors due to low sampling, including lower reproducibility likely from observer variability, while high-grade tumors (G3) are more likely to provide consistent histopathological (>90%) gradings. Overall, our results stress the importance of age-stratified endometrial evaluations and suggest the use of D&C as a valid initial step in identification of premalignant and malignant lesions, while a definitive grade would be determined with hysterectomy specimens.

Conclusion

This study highlights the diverse array of histopathological abnormalities of endometrial lesions among women with abnormal uterine bleeding, which demonstrate clear patterns of association with age and parity. Functional endometrium and benign lesions were most prevalent amongst multiparous and younger women, while malignant and atrophic lesions predominated in older groups. Changes related to pregnancy were limited to reproductive-age women, while inflammatory changes and miscellaneous endometrial abnormality changes were seen in all groups. Evaluation with D&C was associated with good sensitivity and specificity for premalignant and malignant lesions, but poor differentiation between normal and pathologic endometrium. Comparison of D&C with hysterectomy demonstrated, overall, consistent grading of endometrioid adenocarcinoma, primarily through up- or down-grading minor cases. Overall, the study reinforces the importance of histopathology to provide information pertinent to age-related diagnosis and management for abnormal uterine bleeding.

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