

## CORRELATION OF CLINICAL, SONOGRAPHICAL AND HISTOPATHOLOGICAL EXAMINATION IN PERIMENOPAUSAL WOMEN UNDERGOING HYSTERECTOMY FOR ABNORMAL UTERINE BLEEDING

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### Abstract

**Objective:** To identify by using the PALM component of the FIGO classification of AUB, the relationship between the clinical presentation of perimenopausal abnormal uterine bleeding (AUB), pelvic ultrasonographic abnormalities, and histological analysis of hysterectomy tissues.

**Methodology:** This cross-sectional descriptive study was conducted in the Department of Radiography & Imaging Technology, Federal Institute of Health Sciences, from February 2025 to July 2025, and data was collected from affiliated Hospital among perimenopausal women who underwent hysterectomy for AUB. Data included clinical presentations, pelvic ultrasonographic findings, and histopathology reports of hysterectomy specimens, along with demographic variables such as age and parity.

**Results:** From 100 instances, 68 patients, or 68% of the total, were between the ages of 40 and 45. Clinically, heavy menstrual bleeding was the most prevalent. Pelvic ultrasonography identified thicker endometrium in 25% (n=25) of patients and fibroid uterus in 45% (n=45) of cases. 45% (n=45) had fibromyoma, and 15% (n=15) had fibroid with endometrial hyperplasia, according to histopathological analysis. Clinical diagnosis and ultrasonography showed a positive association ( $r = 0.276$ ,  $p < 0.05$ ). Histopathology and clinical diagnosis, however, had a comparatively worse connection.

**Conclusion:** The most common cause of abnormal uterine bleeding in perimenopausal women having hysterectomy was uterine fibroids. When it came to detecting fibroids, radiological and pathological assessments correlated well with clinical diagnosis.

## INTRODUCTION

A woman's ability to reproduce is greatly influenced by her menstrual cycle. From menarche to menopause, it is a physiological dynamical cyclical process that lasts the entirety of a woman's reproductive life. The endometrium, an active part of the menstrual cycle in the female reproductive system, reacts dynamically to a range of pathological and physiological stimuli. The endometrial glands and stroma undergo a variety of phasic changes, including secretion and growth[1]. "The bleeding from the secretory endometrium caused by progesterone drawl is known as normal menstruation. It is post-ovulatory and is characterized by stromal and glandular breakdown and shedding that lasts no more than five days during a normal 28-day cycle. Abnormal uterine bleeding is the term for any deviated vaginal bleeding that does not proceed according to the regular menstrual cycle[2]. Abnormal uterine bleeding (AUB), a significant medical issue, can result from a variety of uterine disease processes, including benign neoplastic, malignant, and acute and chronic inflammatory alterations. AUB includes strong menstrual bleeding that is cyclical and acyclical, intermenstrual bleeding, acyclical and infrequent menstrual bleeding, and any vaginal bleeding that is irregular in volume, regularity, frequency, or duration and that happens outside of pregnancy[3]. AUB primarily affects people in their perimenopausal years. Peri-menopause is defined by the WHO as the time between two and eight years before menopause and one year following the last menstrual cycle. FIGO created the PALM-COEIN classification system to classify potential causes of AUB. This well recognized nomenclature and classification system is utilized for research purposes as well as for the diagnosis and treatment of AUB globally. 2. Because the former contains structural components that can be detected by imaging and histopathological examinations, the PALM and COEIN are two groups that are distinct in their entities. In contrast, the latter has nonstructural entities that are not well characterized by imaging or histology. Since there was no clear way to categorize individuals with AUB who were suspected of having several etiologies, this approach was created[8]. Because AUB is a debilitating condition that significantly impairs socioeconomic status and all facets of a woman's life, a comprehensive evaluation

of the patient is necessary to rule out serious pathology, such as genital tract cancers, and to ensure appropriate diagnosis and treatment. 8. Because Pakistan is a developing nation with a compromised health system, socioeconomic factors play a significant role in patient management. As such, it can be difficult for clinicians to reach a definitive diagnosis before moving forward with a full solution while maintaining a low threshold for targeted investigations following a structured history and pertinent examination. The issues include excessive or insufficient treatment of patients with AUB and financial load brought on by excessive usage of investigations[9]. Before starting therapy, a number of radiological imaging modalities can help make a definitive diagnosis. Ultrasonography, either trans-abdominal or trans-vaginal (in challenging cases), is a readily available, inexpensive, non-invasive, and reasonably sensitive imaging technique that provides an estimate of endometrial thickness, regularity, endometrial polyps, fibroid detail, and some characteristics of adenomyosis[5]. In the event of an endometrial polyp or submucosal fibroids, the endometrium can be evaluated using hysteroscopy and, in a compromised setting, sonohysterography.[14]. Given the woman's age and the stage of her menstrual cycles, histological changes of the endometrium can identify the symptoms of different disease patterns. 8. Even though there are a number of treatment alternatives for AUB, hysterectomy and other surgical procedures are still the most common gynecological surgeries done worldwide because of the higher patient satisfaction rate.

The rationale of study was that by understanding the range of perimenopausal abnormal uterine bleeding in patients scheduled for hysterectomies and comparing them with radiological imaging and histopathological findings, we can lessen the strain on the healthcare system by limiting the number of investigations and offering better treatment options once the diagnosis has been confirmed. This aim of study was to use the PALM category of the FIGO classification for abnormal uterine bleeding to link the clinical evaluation with the ultrasonography and histology of uterine specimens following hysterectomy.

**Methodology**

This study was conducted in the obstetrics and gynecology department of the University of Lahore Teaching Hospital in Lahore, Pakistan, with permission from the relevant institute's research ethics board. Following acceptance of the summary, 100 cases (fulfilling inclusion criteria) were recruited for this cross-sectional study during a 6-month period from February 2025 to July 2025. Individuals in the perimenopausal age range of 35 to 55 who experienced abnormal uterine bleeding were recruited for the research following a clinical assessment, thyroid hormone profile, endometrial biopsy, radiological imaging (pelvic ultrasonography), and a scheduled hysterectomy. Following that, their histopathologies were examined for the intended research. Those who had hysterectomies for obstetrical bleeding, coagulopathy, or endocrine disorders were not included. Following formal agreement, the 100 patients that met the inclusion criteria were chosen using a non-probability convenient approach from the obstetrics and gynecology outpatient department. In order to do a clinical diagnosis, we documented the women's age, parity, menstrual history, and health assessment. A pelvic ultrasonographic evaluation was performed on each of these patients, and the results were recorded with respect to endometrial thickness, myometrial texture, and growth. Following the histopathology report of hysterectomies, endometrial and myometrial

results were collected. SPSS version 22 was used to evaluate all of the data after it had been collected. In percentages, categorical variables were summed together. In the context of continuous data, means and medians were defined. The histology of the endometrium and myometrium in uterine tissues, clinical presentation, and pelvic uterine ultrasonography were all correlated using Pearson correlation.

**Results**

The overall count of patients with genital tract The average age was 44 years old overall, with a standard deviation of 3.77 years. Of all instances, 58% (58) of the patients are between the ages of 40 and 45. According to the study, the greatest number of patients with parity was three to five. Heavy menstrual bleeding and irregular heavy menstrual flow were the most prevalent presenting problems. Clinical examination and clinical symptoms served as the basis for the clinical diagnosis. The data in Table I indicate that the highest percentage of clinical diagnoses is unclassified AUB, which is 39% (39), followed by fibroid uterus (32%; 32), and adenomyosis (13%)[13]. Trans-pelvic ultrasonography results revealed that the greatest proportion of patients had fibroid findings 45% (45), followed by endometrial thickness >10mm 25% (25) as indicated in table II.

**Table I: Frequency of Clinical Diagnosis**

Clinical Diagnosis	N	%
Unclassified AUB	39	39
Fibroids	32	32
Adenomyosis	13	13
PID	14	14
Endometrial Polyps	2	2

**Table II: Ultrasonographic Diagnosis**

USG Diagnosis	N	%
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ET>10	25	25
ET>10	4	4
Polyp	1	1
ET Irregular	8	8
Fibroid	45	45
Bulky uterus	14	14
Adenomyosis	3	3

Table III displays the results of the final diagnosis made on the histopathology of the hysterectomy specimen. The results showed that the uterus was fibroid in 45% of cases (45), followed by fibroid with endometrial hyperplasia in 15% of cases (15), endometrial hyperplasia alone in 12% of cases (12), and adenomyosis. The data from histology, ultrasound, and clinical diagnosis were subjected to Pearson correlation.

Table IV indicates a positive correlation between clinical diagnosis and pelvic ultrasonography, namely  $r = .276$ . This link is also significant, as indicated by the P value being less than 0.05. Additionally, it is noted that there is a negative correlation between clinical diagnosis and endometrial histopathology ( $r = -.292$  and  $P = <0.05$ ), while there is a positive correlation between clinical diagnosis and myometrial histopathology ( $P = <0.05$ ) and a Pearson correlation coefficient of .572.

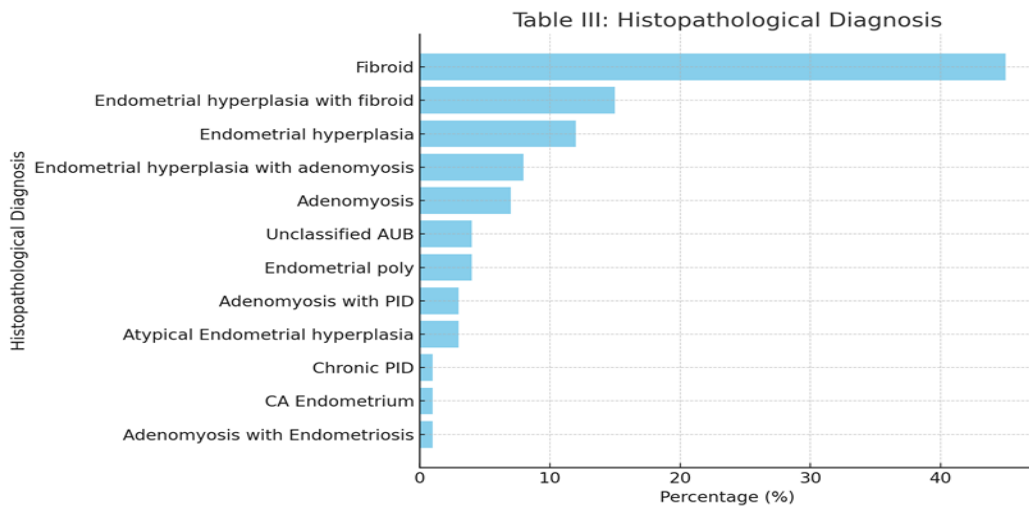


Table IV: Pearson Correlation		
Clinical Diagnosis	Pearson Correlation Coefficient (r)	p-Value

Between clinical diagnosis and pelvic Usg	0.276	<0.001
Between clinical diagnosis and histopathological findings of endometrium	-0.292	>0.001
Between clinical diagnosis and histopathology of myometrium	0.572	<0.001

### Discussion

Perimenopausal AUB has a major negative influence on women's quality of life and places a financial strain on families. As stressed in NICE guidelines from 2018, it is important to make sure that interventions are implemented with an emphasis on improving quality of life rather than just blood loss[8,20]. In this study, the average age at which a hysterectomy was performed for irregular uterine bleeding was 44 years old. The greatest number of cases seen had parity greater than 3. Alakanande et al. (2015) observed similar outcomes in their study conducted at Gauhati Medical College and Hospital's Obstetric & Gynecology department[7]. Another study by Sawke et al. (2015) found that the majority of individuals who had hysterectomy due to severe menstrual bleeding were between the ages of 41 and 51. This finding was also supported by another study by Shaheen et al[6].

The causes of irregular uterine bleeding are difficult to categorize. The American College of Obstetricians and Gynecologists has endorsed the classification system and standardized terminology proposed by the Menstrual Disorder working group of the International Federation of Gynecology and Obstetrics for the etiologies of the symptoms of AUB in non-gravid uteri. The executive board of the International Federation of Gynecology and Obstetrics has approved the proposal. The causes of abnormal uterine bleeding are conveniently classified as uterine structural abnormalities using this system, and they are nominated using the acronym PALM-COEIN: polyp, adenomyosis, leiomyoma, malignancy and hyperplasia, coagulopathy, ovulatory dysfunction, endometrial, iatrogenic, and not further categorized[2,3]. As mentioned by Devanish Mishra (2017) in his study and demonstrated in other investigations, this system directs research by identifying correlations between various elements of

its characteristics and investigation instruments and therapy methods[4,15].

This study employed the PALM section of the FIGO classification of abnormal uterine bleeding. Based on clinical examination, this study indicated that unclassified AUB was the most prevalent clinical diagnosis at 39% (39), followed by fibroid at 32% (32) and suspicion of adenomyosis at 13% (13). Fibroid is the most prevalent diagnosis on pelvic ultrasonography in 45% of cases (45), followed by endometrial thickness greater than 10 mm in 25% of cases (25) and a bulky uterus in 14% of cases (14) but suspicion of adenomyosis in only 3% of instances (3).

Our study found that fibroid is the most common histopathology diagnosis, occurring in nearly 45% (45) of cases. Additionally, 15% of histopathology reports revealed leiomyoma with proliferative type endometrium hyperplasia, increasing the percentage of both fibroid and endometrial pathology. Because some patients were unable to pay for their hormonal profiles prior to a hysterectomy, 12% (12) of patients were identified with isolated endometrial hyperplasia. According to the histology report, 7% (7) of cases had adenomyosis, and 8% (8) of cases had combined pathology of adenomyosis with endometrial hyperplasia. However, in 4% (4) of instances, endometrial polyps were seen. In their investigation, Sajjad et al. found that 39% of patients had leiomyomas, with 19% having adenomyosis. Five percent of patients had dual pathology, which included both adenomyosis and leiomyomas[12]. Our study was part of this investigation. In their paper Histopathology findings in patients presenting with menorrhagia: A study of 100 hysterectomy specimens, Sawke et al. demonstrated dual pathology consisting of both adenomyosis with endometrial hyperplasia (11%) and 6% instances of leiomyoma with adenomyosis[6,19].

Based on a correlation coefficient of  $r = .276$  and a P value of less than 0.001, this study indicated that there is a positive association between clinical diagnosis and pelvic ultrasonography for the evaluation of the PALM component of the FIGO classification of abnormal uterine bleeding. Although there is a negative correlation between clinical diagnosis and endometrial histopathology ( $r = -.292$ ), there is also a positive correlation between clinical diagnosis and myometrial histopathology because lesions can be assessed during clinical examination, as indicated by its correlation coefficient  $r = .572$  ( $P = <0.001$ ). This might be due to very minor changes on physical examination after endometrial pathology and can only be found with detailed microscopic examination. In PALM arm of FIGO classification for abnormal uterine bleeding maximum percentage belong to leiomyoma, adenomyosis, endometrial hyperplasia and dual pathologies of aforementioned factors and there correlation with clinical diagnosis is significant in cases of fibroids and adenomyosis but reduced with endometrial pathologies. As shown in study by Mishra et al where he found L most common in AUB and AL -AUB at second number and also same found in other studies [4,16,17,18].

### Conclusion

Uterine fibroid leading to cause of abnormal uterine bleeding in perimenopausal women undergoing hysterectomy. Radiological and pathological evaluations showed good correlation with clinical diagnosis in identifying fibroids.

**Conflict of Interest:** None

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