Categorization of Palm Coien Classification Based on Trans Vaginal Ultrasound, Histopathological Examination & Hysteroscopy in Patients of Aub

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Abstract

Aim: The aim of the study is to evaluate the diagnostic accuracy of transvaginal sonography and hysteroscopy in classifying abnormal uterine bleeding (AUB) according to PALM COEIN Classification.

Methods: A prospective observational study. A detailed history was taken and the type of abnormal uterine bleeding pattern was recorded Per speculum examination was done to note abnormal discharge, erosion, cervical hypertrophy or cervical polyp. Detail general, systemic and local examination to record the size of the uterus, its mobility and the presence of any cervical or adnexal masses A per vaginal examination was done to know about any uterine cervical and adenexal abnormality. Laboratory investigations including CBC, coagulation profile, random blood sugar, liver and kidney function and pregnancy test done. TVS, hysteroscopy, histopathological findings of the patients were recorded.

Results: The sensitivity and specificity of TVS in identifying AUB was 77.78% and 88.64% respectively. The sensitivity and specificity of hysteroscopy in identifying AUB was 81.48% and 92.05% respectively. The PALMCOEIN classification system categorizes various endometrial conditions, within a group of 115

individuals. The categorization of palm coien classification based on trans vaginal ultrasound, histopathological examination and hysteroscopy in patients of AUB has also been done.

Conclusions: Abnormal uterine bleeding (AUB) is an age-related pathology that needs thorough evaluation as it could be the only clinical manifestation that affects the quality of life in women. The combined findings from TVS and hysteroscopy provide clinicians with complementary diagnostic information, enabling a comprehensive approach to AUB diagnosis and management. However more multicentric studies are required to formulate guidelines to recommend TVS /Hysteroscopy as diagnostic /screening modality alternative to conventional endometrial biopsy.

Keywords: Abnormal uterine bleeding, Hysteroscopy, Gynecologic practice, Postmenopausal patients

Introduction

Abnormal uterine bleeding (AUB) is a symptom and not a disease. It is one of the most frequently encountered complaints in gynecologic practice and may affect over 50% of reproductive-aged women, girls.[1]

Globally, the prevalence of AUB among reproductive-aged women is estimated to range from 3% to 30%, with a higher incidence occurring around the onset of menstruation and during perimenopause. AUB accounts for 70% of outpatient clinic applications and 25% of gynecological operations among perimenopausal and postmenopausal patients.[2]

Abnormal uterine bleeding can manifest in various conditions, serving as a clinical indicator of hormonal fluctuations or underlying pathologies within the female genital tract, especially in perimenopausal women. Structural abnormalities of the uterus (such as polyps, adenomyosis, fibroids, malignancies, or hyperplasia),

disruptions in clotting pathways (due to coagulopathies or iatrogenic causes), or perturbations in the hypothalamic-pituitary-ovarian axis (resulting from ovulatory/endocrine disorders or iatrogenic factors) can all disrupt menstruation and precipitate abnormal uterine bleeding.[3]

Abnormal uterine bleeding (AUB) is a prevalent symptom encountered in gynecologic practice, affecting over 50% of reproductive-aged women and girls. It is a symptom and not a disease; which is characterized by irregular, excessive, frequent, or prolonged bleeding from the uterine corpus in the absence of pregnancy. Clinical examination and investigations are essential to find out the etiological factor in the women presenting with AUB. The ideal diagnostic tool should be minimally invasive or non-invasive, user-friendly, well- received by patients, cost-effective, and possess high sensitivity and specificity. However, no single method fulfills all these criteria; some are unsuitable for identifying focal injuries, while others are overly invasive and poorly tolerated by patients. Consequently, there remains a lack of consensus on the most appropriate diagnostic approach for evaluating AUB in perimenopausal patients. Therefore, this study aimed to assess the diagnostic accuracy of transvaginal sonography and hysteroscopy in evaluation and classification of abnormal uterine bleeding.

Methodology

It is a perspective observational study and the sample size is 115.Demographic baseline details of the patients like age, weight, height, BMI and comorbidities were recorded. The obstetrical history include parity, mode of delivery was taken. A detail menstrual history regarding the cycle length, no of days

of menstruation and the type of abnormal bleeding was taken. Per speculum examination was done to note abnormal discharge, erosion, cervical hypertrophy or cervical polyp. Detail general, systemic and local examination to record the size of the uterus, its mobility and the presence of any cervical or adnexal masses A per vaginal examination was done to know about any uterine cervical and adenexal abnormality. Laboratory investigations including CBC, coagulation profile, random blood sugar, liver and kidney function and pregnancy test done. Transvaginal ultrasound examination was done using 7.5MHZ vaginal transducer. Hysteroscopy was performed within 48 hours of ultrasonography. After appropriate data filtration, the datasheet was analysed using Graphpad Prism (vs. 9.2.0). Chi-square test will be used as test of significance for qualitative data. Sensitivity, specificity, positive predictive value and negative predictive value were estimated for TVS and hysteroscopy against histopathology. The duration of the study is from 2022 to 2024, The study population were selected based on the following criteria.

Inclusion criteria: All patients in the age group 18-45 years, Patients who underwent hysteroscopy for evaluation of abnormal uterine bleeding, Patients who give consent for study participation.

Exclusion criteria: Menopausal women**,** Females on hormonal therapy at the time of first presentation**,** Females with intrauterine tool in situ**,** Women with endocrine disorders**,** Females with bleeding issues**,** Females with adnexal pathology**,** Women opting for medical management for abnormal uterine bleeding, Pregnancy and related causes of bleeding per vaginum**.**

Statistical Analysis

Data became gathered using a predesigned template and compiled in an Excel spreadsheet. The final results, facts became analysed descriptively. Baseline patient characteristics were supplied as frequencies for specific variables and as means with widespread deviations or medians for continuous variables. After appropriate fact filtration, the dataset changed and analysed using Graphpad Prism (vs. 9.2.0). the Chi-square check used for quantitative information importance, even as the impartial t check turned into use to become aware of mean variations between quantitative variables.

Observations and Results

Table 1: Sociodemographic factors of patients with AUB

Characteristic	Cases (N=27)		Control (N=88)		P-value
	N	%	N	%	
Age group					
• 41-45 years	12	44.4	42	47.7	0.7649
• 46-50 years	15	55.6	46	52.3	
BMI (kg/m^2)					
• Normal	2	7.4	49	55.7	<0.001
• Overweight/Obese	25	92.6	39	44.3	
Education					

• Illiterate	3	11.1	12	13.6	
• Primary	8	29.6	28	31.8	
• Secondary	10	37.0	25	28.4	0.9427
• Graduated	4	14.8	15	17.0	
• Post graduate	2	7.4	8	9.1	
Religion					
• Hindu	10	37.0	37	42.0	
• Muslim	14	51.9	44	50.0	0.8279
• Others	3	11.1	7	8.0	
Socioeconomic status					
• Lower class	4	14.8	19	21.6	
• Lower middle class	15	55.6	47	53.4	0.8814
• Upper class	3	11.1	8	9.1	
• Upper middle class	5	18.5	14	15.9	
Occupation					
• Housewife	16	59.3	49	55.7	
• Skilled	6	22.2	23	26.1	0.9168
• Un-skilled	5	18.5	16	18.2	

Among 115 study subjects,53.1% of the study subjects had age between 41-45 years and the rest 46.9% of the study subjects had age between 46-50 years.44.3% of the study subjects had BMI of 18.6 -24.9 kg/m2 , 50.4% of the study subjects had BMI 25-30 Kg/m2 and 5.3% of the study subjects have BMI >30 Kg/m2.

The data suggests a diverse educational background within the subjects. From the above table majority 31.3% of the study subjects completed only primary education. 30.4% of the subjects completed secondary education.

More than half of the study subjects (56.5%) were house wives. Skilled workers make up 25.2% of the groups and the rest 18.3% were unskilled workers

As depicted in the above table, majority (61.7%) of the study subjects had parity more than two, 26.7% of the subjects had parity two and 12.2% of the study subject's had parity one.

Table 2: Comparison of PALM-COEIN classification with TVS findings

PALMCOEIN	Total Number	%	Number of cases detected on TVS	%	P-value
Polyp	24	20.9	10	41.6	0.03
Adenomyosis	18	15.7	14	77.8	<0.001
Leiomyoma	33	28.7	28	84.8	<0.001
Malignancy	3	2.6	1	33.3	0.003
Coagulopathy	4	3.5	-	-	-
Ovulatory Dysfunction	12	10.4	12	100	0.24
Endometriosis	16	13.9	5	31.2	0.08
Iatrogenic	5	4.3	5	100	<0.001
Non-classified	0	0	-	-	-

In the above table, Categorisation of PALM COEIN Classification based on Trans Vaginal Ultrasound has been done.

Table 3: Comparison of PALM-COEIN classification with hysteroscopy findings

PALMCOEIN	Total Number	%	Number of cases detected on hysteroscopy	%	P-value
Polyp	24	20.9	21	87.5	<0.0001
Adenomyosis	18	15.7	-	-	-
Leiomyoma	33	28.7	7	21.2	<0.37
Malignancy	3	2.6	3	100	<0.0001
Coagulopathy	4	3.5	-	-	-
Ovulatory Dysfunction	12	10.4	-	-	-
Endometriosis	16	13.9	-	-	-
Iatrogenic	5	4.3	5	100	<0.0001
Non-classified	0	0	-	-	-

In the above table, Categorisation of PALM COEIN Classification based on Hysteroscopy has been done.

Table 4: Comparison of PALM-COEIN classification with HPE findings

PALMCOEIN	Total Number	%	Number of cases detected on HPE (EB + Surgery)	%	P-value
Polyp	24	20.9	19	79.1	<0.001
Adenomyosis	18	15.7	16	88.8	<0.001
Leiomyoma	33	28.7	24	72.7	<0.001
Malignancy	3	2.6	3	100	<0.001
Coagulopathy	4	3.5	-	-	-
Ovulatory Dysfunction	12	10.4	4	33	0.02
Endometriosis	16	13.9	10	62.4	<0.001
Iatrogenic	5	4.3	-	-	-
Non-classified	0	0	-	-	-

In the above table, Categorisation of PALM COEIN Classification based on Histopathological findings has been done.

Table 5: Comparison of TVS vs HPE findings in patients with AUB

TVS findings	HPE findings		Total
	Pathological	Normal	
Abnormal	21	10	31
Normal	6	78	84
Total	27	88	115

Table 6: Diagnostic evaluation of TVS in patients with AUB

Statistics	Value	95% CI
Sensitivity	77.78%	57.74% to 91.38%
Specificity	88.64%	80.09% to 94.41%
Positive Predictive Value	67.74%	53.11% to 79.56%
Negative Predictive Value	92.86%	86.47% to 96.35%
Accuracy	86.09%	78.39% to 91.83%

Table 7: Comparison of hysteroscopy vs HPE findings in patients with AUB

Hysteroscopy findings	HPE findings		Total
	Pathological	Normal	
Abnormal	22	7	29
Normal	5	81	86
Total	27	88	115

Table 8: Diagnostic evaluation of hysteroscopy in patients with AUB

Statistics	Value	95% CI
Sensitivity	81.48%	61.92% to 93.70%
Specificity	92.05%	84.30% to 96.74%
Positive Predictive Value	75.86%	60.16% to 86.74%
Negative Predictive Value	94.19%	87.99% to 97.28%
Accuracy	89.57%	82.48% to 94.49%

Figure 1: USG image showing endometrial polyp.

Figure 2: USG image showing adenomyosis

Figure 3: 48 years old female with obstetric history P2L2 experienced heavy menstrual bleeding, and the figure shows her hysterectomy specimen with pedunculated Polyp.

Figure 4: 46 years old female with obstetric history P3L3 with experienced heavy menstrua bleeding (menorrhagia) along with Abnormal Uterine Bleeding (AUB-L).

Discussion

The study comprised 115 patients with abnormal uterine bleeding. AUB is frequently encountered among females, particularly in the perimenopausal age group, spanning the fourth to fifth decades of life. Our findings reflect this trend, with AUB observed in 46.9% and 53.1% of participants aged 41-45 years and 46-50 years, respectively, indicative of women in the perimenopausal age range. It has been suggested that increased menstrual blood loss in perimenopausal women may stem from

ovulatory cycles, followed by prolonged periods of anovulation with elevated estradiol concentrations. The findings of the present study is compared with the following studies.

Table 9: Comparison of overall efficacy of transvaginal sonography with other studies

Study	Sensitivity	Specificity	PPV	NPV
Urvashi et al.[78]	73.07%	95.83%	95%	76.66%
Mishra et al.[79]	73.9%	73.7%	73.70%	73.8%
Choudary J et al.[71]	76%	94%	76%	94%
Present study	77.78%	88.64%	67.74%	92.86%

Conclusion

Abnormal uterine bleeding (AUB) is an age-related pathology that needs thorough evaluation as it could be the only clinical manifestation that affects the quality of life in women. We observed a correlation between high BMI (>25 kg/m2) and an increased incidence of menstrual abnormalities, highlighting the importance of weight management in promoting menstrual health. Furthermore, our study revealed that multiparous women, particularly those with a parity of more than two, were more likely to experience AUB. This finding may be attributed to various factors such as uterine changes, hormonal shifts, and potential postpartum complications. TVUS exhibited a sensitivity of 77.78% and a specificity of 88.64%, along with a positive predictive value (PPV) of 67.74% and a notably high negative predictive value (NPV) of 92.86%. These findings demonstrate TVUS's ability to identify AUB cases accurately and its reliability in ruling out AUB in negative cases, supporting its role as a valuable non-invasive imaging tool for initial AUB assessment. On the other hand, hysteroscopy demonstrated higher sensitivity (81.48%) and specificity (92.05%), with a PPV of 75.86% and an impressive NPV of 94.19%. The overall accuracy of hysteroscopy was 89.57%. These robust statistical outcomes highlight the effectiveness of hysteroscopy in accurately diagnosing AUB cases and excluding AUB in negative findings, underscoring its importance as a direct visualization technique for detailed assessment and potential therapeutic interventions. The combined findings from TVUS and hysteroscopy provide clinicians with complementary diagnostic information, enabling a comprehensive approach to AUB diagnosis and management. It is recommended that TVS be used as the first-step investigation for cases of AUB in the reproductive age group. In case the TVS shows normal uterine cavity, further evaluation can be omitted and patient can be started on medical treatment for her symptoms. If the patient fails to respond to medical treatment, only then should further evaluation with hysteroscopy or sonohysterography should be considered. In case the initial TVS shows some abnormality, it can help in directing the appropriate next intervention. However more multicentric studies are required to formulate guidelines to recommend TVUS /Hysteroscopy as diagnostic /screening modality alternative to conventional endometrial biopsy.

Acknowledgment

References

1. Jain V, Munro MG, Critchley HOD. Contemporary evaluation of women and girls with abnormal uterine bleeding: FIGO Systems 1 and 2. Int J Gynecol Obstet. 2023; 162(2):29-42.

2. Sindhu U, Pallavi G, Bharati D Anvekar, Shivakumaraswamy P, Babu AS. Garbhashayasriji virekah: a critical understanding of the mode of action of virechana in asrikdara. Int. J. Res. Ayurveda Pharm.2022; 13(6).

3. Dreisler E, Poulsen LG, Antonsen SL, Ceausu I, Depypere H, Erel CT, et al. EMAS clinical guide: assessment of the endometrium in peri and postmenopausal women. Maturitas. 2013; 75(2):181-90.

4. Wouk N, Helton M. Abnormal Uterine Bleeding in Premenopausal Women. Am Fam Physician. 2019; 99(7):435-443.

5. Davis E, Sparzak PB. Abnormal Uterine Bleeding. [Updated 2023]. In: StatPearls. Treasure Island (FL): StatPearls Publishing; 2024 Jan-.

6. Whitaker L, Critchley HO. Abnormal uterine bleeding. Best Pract Res Clin Obstet Gynaecol. 2016; 34:54-65.

7. Mahapatra M, Mishra P. Clinicopathological evaluation of abnormal uterine bleeding. Journal of Health Research and Reviews. 2015; 2. 45.