

TAS/TVS Versus Histopathological Diagnosis in Abnormal Uterine Bleeding: Analytical Cross Sectional Study

Anumeha Anand

Senior Resident, Department of Obstetrics and Gynecology, Netaji Subhas Medical College and Hospital, Bihta, Patna, Bihar, India

Received: 09-11-2021 / Revised: 29-12-2021 / Accepted: 23-01-2022

Corresponding author: Dr. Anumeha Anand

Conflict of interest: Nil

Abstract

Aim: The aim of this study to evaluate the TAS/TVS versus histopathological diagnosis in abnormal uterine bleeding.

Methods: This analytical cross sectional study was carried out in the Department of Obstetrics and Gynecology, Netaji Subhas Medical College and Hospital, Bihta, Patna, Bihar, India for 1 year. 100 females of various age groups, with a clinical diagnosis of AUB were included in this study. Patients fulfilling the inclusion criteria were selected through detailed clinical history, examination: general physical, systemic, gynecological (per speculum, per vaginal) and all general and specific investigations were carried out. Written informed consent (form attached) was taken from patient interviewed, examined and investigated as per the predesigned proforma (attached). All the patients were subjected to premenstrual dilatation and curettage and hysterosopic guided biopsy accordingly. Tissue obtained was subjected to histopathological examination.

Results: 67 patients had menorrhagia as a primary complaint. Heavy Menstrual bleeding (HMB) in 35 (35%) and Heavy and Prolonged Menstrual Bleeding (HPMB) in 32 (32%), 21(21%) patients have irregular menstrual bleeding patterns, while 12(12%) patients had post- Menopausal bleeding. Histopathological examination maximum number of patients were found having Myoma in 18 cases (18%) followed by Adenomyosis in 16 cases (16%) and Myoma+ Adenomyosis existed in 16 (16%) cases. Least frequently condition was myoma with endometrial carcinoma and 1 case (1%) of Adenomyosis with endometrial carcinoma. The sensitivity and specificity of TAS for Diagnosing Polyp as compared to HPE was 52.87% and 98.56% while positive predictive value and negative predictive value were 95.10 % and 79.11% respectively.

Conclusion: Transabdominal or transvaginal ultrasound is low cost primary modality for screening and should include as a first line screening method. Though the investigation and management of AUB among the non-gravid women was confusing, histopathological diagnosis proved to be the gold standard.

Keywords: Abnormal uterine bleeding (AUB), adenomyosis, endometrial polyp, myoma, non-gravid

This is an Open Access article that uses a fund-ing model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.

Introduction

Abnormal uterine bleeding (AUB), defined by bleeding occurring outside of normal cyclic menstruation that includes change in regularity, frequency of menses, duration or amount of bleeding during or in between periods.[1] It is one of the most common gynaecological problem that health care providers face, accounting for 9- 14% from menarche to menopause.[2] In India, the reported prevalence is 17.9%. [3] This proportion rises to 50% when perimenopausal and postmenopausal age groups are considered. It not only affects the quality of life such as intimate relationships, day-to-day living but can have serious adverse consequences such as anaemia, underlying malignancy or increased financial burdens.[2] The International federation of gynecology and obstetrics working group on menstrual disorders has proposed a classification system (PALM-COEIN) for causes of the AUB in women.[4] The categories of PALM group (polyp, adenomyosis, leiomyoma, malignancy and hyperplasia) are discrete structural entities that can be defined by imaging and/ or by histopathology, whereas those in the COEIN group (coagulopathy, ovulatory disorders, endometrial, iatrogenic and non-classified) represent non- structural causes that cannot be defined by these techniques. The broad range of normal variation in menstrual bleeding causes difficulty in identifying abnormal patterns. The problem is that uterine bleeding has a wide range of diagnostic possibilities. Goals of clinical management are primarily dependent upon attaining a correct etiological diagnosis. Diagnostic evaluation includes investigations ranging from CBC, hormonal assays, traditional dilatation and curettage, office based endometrial biopsy to pelvic ultrasonography for evaluation of endometrial/myometrial pathology contributing to the presentation. Transvaginal sonography (TVS) is an inexpensive non- invasive modality

permitting the use of higher frequency ultrasound waves at greater proximity to the uterus with no need for anaesthesia which is the recommended first line diagnostic tool for assessing uterine pathology in women presenting with AUB.[5,6] It is considered a natural extension of the bimanual pelvic examination by many gynaecologists. It clearly depicts the uterine contour, echotexture, the status of ovaries and evaluates the endometrium in terms of thickness and its ovulatory and hormonal status.

Hysteroscopy has ushered a new era in the evaluation of abnormal uterine bleeding. It is easy to perform and widely available in study setup. By direct visualization of the uterine cavity it is possible to pin point the etiology in the majority of the cases. It can accurately detect endometrial hyperplasia and aids in the early diagnosis of endometrial carcinoma, uterine polyps and submucosal myoma.[7,8] It is recommended to further evaluate the endometrium in women with abnormal bleeding when the endometrial echo is normal on TVS.[9]

Material and methods

This descriptive observational with a cross-sectional study was carried out in the Department of Obstetrics and Gynecology, Netaji Subhas Medical College and Hospital, Bihta , Patna, Bihar, India for 1 year. 100 females of various age groups, with a clinical diagnosis of AUB were included in this study. Patients fulfilling the inclusion criteria were selected through detailed clinical history, examination: general physical, systemic, gynecological (per speculum, per vaginal) and all general and specific investigations were carried out. Written informed consent (form attached) was taken from patient interviewed, examined and investigated as per the predesigned proforma (attached). All the patients were subjected to premenstrual dilatation and curettage and

hysterosopic guided biopsy accordingly. Tissue obtained was subjected to histopathological examination. After primary data collection, a master chart was prepared with the help of Microsoft excel sheet and data entered into it was analyzed according to the set objectives. Non-

parametric (discrete) data was analyzed using chi-square test. Mean, standard deviation and percentage was used for analysis of parametric (continuous) data. A P value of <0.05 was considered statistically significant.

Results

Table 1: Age wise distribution of AUB cases

Age group	N (100)	Percentage (%)
31-40	17	17
41-50	62	62
51-60	11	11
61-70	8	8
>70	2	2

Most of the cases were found in 41-50 year age group i.e. 62 and least case were

found in 70<age group

Table 2: Distribution of menstrual pattern in various age groups

Age group (years)	31-40	41-50	51-60	61-70	>70	Total
Menstrual pattern						
HMB	9	24	1	1	0	35
HPMB	7	22	3	0	0	32
IMB	1	15	3	2	0	21
PMB	0	1	4	5	2	12
Total	17	62	11	8	2	100

67 patients had menorrhagia as a primary complaint. Heavy Menstrual bleeding (HMB) in 35 (35%) and Heavy and Prolonged Menstrual Bleeding (HPMB) in

32 (32%), 21(21%) patients have irregular menstrual bleeding patterns, while 12(12%) patients had post- Menopausal bleeding.

Table 3: Tabulating the histopathological findings in all age group.

Pathology / Age group (years)	31-40	41-50	51-60	61-70	>70	Total
Myoma	4	14	0	0	0	18
Adenomyosis	4	11	1	0	0	16
Endometrial polyp	1	3	1	0	0	5
Cervical polyp	0	2	0	0	0	2
Endometrial carcinoma	0	1	2	4	1	8
Cervical carcinoma	0	0	0	0	0	0
Myoma+ Adenomyosis	2	11	3	0	0	16
Myoma+ polyp	1	4	1	0	0	6
Myoma+ endometrial carcinoma	0	0	1	2	0	3
Myoma+ cervical carcinoma	1	0	0	0	1	2
Polyp+ Adenomyosis	3	8	1	0	0	12

Polyp+ endometrial carcinoma	0	1	0	1	0	2
Adenomyosis+ endometrial carcinoma	0	0	0	1	0	1
Myoma+ polyp+ Adenomyosis	1	7	1	0	0	9
Total	17	62	11	8	2	100

Histopathological examination maximum number of patients were found having Myoma in 18 cases (18%) followed by Adenomyosis in 16 cases (16%) and Myoma+ Adenomyosis existed in 16

(16%) cases. Least frequently condition was myoma with endometrial carcinoma and 1 case (1%) of Adenomyosis with endometrial carcinoma.

Table 4: Correlation of various diagnostic modalities in AUB

Findings	USG	HPE	p value
Normal	32	0	<0.0001
Myoma	18	18	0.87
Endometrial polyp	3	5	0.62
Cervical polyp	0	2	0.26
Adenomyosis	10	16	0.34
Endometrial carcinoma	4	8	0.39
Cervical carcinoma	0	0	0
Myoma+ Adenomyosis	14	16	0.73
Myoma+ polyp	3	6	0.43
Myoma+ Endometrial carcinoma	1	3	0.46
Myoma+ Cervical carcinoma	1	2	0.71
Polyp+ Adenomyosis	7	12	0.38
Polyp+ Endometrial carcinoma	1	2	0.71
Adenomyosis+ Endometrial carcinoma	0	1	0.50
Myoma+ polyp+ Adenomyosis	6	9	0.20

Table 5: Pathological findings in patients of AUB

Findings	Pathology	n	%
Tissue findings	Normal Endometrium	20	20
	Endometrial hyperplasia	26	26
	Proliferative phase	11	11
	Secretary	17	17
	Mixed	3	3
	Atrophic endometrium	3	3
	Endometritis	1	1
	Endometrial polyp	5	5
	Endometrial Carcinoma	12	12
	Cervical Carcinoma	2	2
Uterine Pathologies	Myoma	34	34
	Adenomyosis	34	34
	Endometrial polyp	21	21
	Cervical polyp	1	1
	Endometrial carcinoma	9	9
	Cervical carcinoma	1	1

In our study dilatation and curettage findings 20 cases (20%) had normal endometrium. Highest number of patients. i.e. 26 corresponding to 26% were detected as endometrial hyperplasia. secretary endometrium was detected in 17(17%), proliferative in 11(11%) cases. 1 case (1%) had endometritis and 5 cases (5%) had endometrial polyp while 12 (12%) cases were diagnosed as

endometrial carcinoma and 2 (2%) had cervical carcinoma.

In our present study the most recurring clinical uterine lesion noted was myoma in about 34% followed by Adenomyosis in about 34% of times. Endometrial polyp was noted at 21% of times and endometrial carcinoma was noted in 9% cases while cervical polyp and cervical carcinoma was noted at 1% of cases.

Table 6: The sensitivity and specificity of TAS for Diagnosing Polyp compared to HPE

Statistic	value
Sensitivity	52.87%
Specificity	98.56%
Positive Predictive Value	95.10%
Negative Predictive Value	79.11%

The sensitivity and specificity of TAS for Diagnosing Polyp as compared to HPE was 52.87% and 98.56% while positive predictive value and negative predictive value were 95.10 % and 79.11% respectively.

Discussion

USG forms the baseline imaging modality, Ultrasonography (USG) helps excludes organic pathology for AUB and is well accepted that for various disease, pathology can be detected accurately by histopathological examination (HPE).[10] A comprehensive history and physical examination, with focus on the menstrual history and genitourinary exam was most helpful in determining the diagnosis; however, based on the findings, laboratory evaluation or imaging may be necessary.[11] Thus the demographic findings of our study were consistent with other studies. Higher number of patients found in the age group of 41-50 years. In the post-menopausal age group AUB was less, thus may be attributable to the increased rate of hysterectomy for benign indications.

Myoma was the most prevalent histopathological finding during the

examination. In 18(18%) patients while Adenomyosis existed in 16 (16%) patients out of total findings dual pathology of Myoma + Adenomyosis was found in again 16 patients i.e. 16. In various combinations, Myoma was obtained in maximum number of cases i.e in 34 patients in 34 % of the total his to pathological examination.

According to a retrospective study conducted by Ghazala Rizvi *et al.* (2015) and published in 2013 Titled "Histological correlation of Adenomyosis and leiomyomas in hysterectomy specimen as a cause of abnormal uterine bleeding." 94 patients i.e. 51.08% were found to have Adenomyosis and 39.13 % were found to have myoma while 9.78% of the patients have dual pathology. [12] Though the comparison of percentage in our study was favorable to other study but the other studies was retrospective and ours being prospective and since we have taken all the structural causes of abnormal uterine bleeding the overall percentage has come to lower studies.

In our study polyp with Adenomyosis existed in 12 patients as confirmed by histological examination i.e. in 12%. While myoma with polyp and

Adenomyosis existed in 9 patient i.e 9% of cases. Endometrial Carcinoma independently was found in 8 cases i.e 8% while independently endometrial polypexisted in 5 cases while cervical polyp was found in 2 cases. Myoma with polypexisted in 6 cases. Similarly endometrial carcinoma existed with Myoma in 3 cases and cervical carcinoma was found in 2 cases. Endometrial carcinoma with polyp was reported in 2 cases and endometrial carcinoma with Adenomyosis was reported in 1 cases. There was no comparative study found for establish the correlation of our study.

Myoma and Adenomyosis existed in reproductive and perimenopausal age group, while carcinomas mainly constituted the post-menopausal age group. Maximum number of myoma, Adenomyosis and the dual pathology existed in the age group of 31-50 years. Polyp existed in the age group of 41-60 years. Endometrial carcinomas were maximally seen in the age group of 61-70 years of the 2 cases diagnosed as cervical carcinoma one case was diagnosed at 38 years of age and other at 74 years of age this is in accordance with the bimodal distribution of the cervical carcinoma.[13]

The pathological findings of Myoma and Adenomyosis are more consistent with the menorrhagia while carcinomas are more consistent with postmenopausal bleeding and inter-menstrual bleeding.

In our study, all the patients were subjected to dilatation and curettage so as to get endometrial tissue for histopathological examination before proceeding and deciding for surgical management.

Dilatation and curettage findings of 20 patients were normal endometrium for the menstrual day and they were excluded from the study and managed conservatively. highest number of patients. i.e. 26 corresponding to 26% were having

endometrial hyperplasia, secretary endometrium was found in 18 patients proliferative in 11 patients 1 patient had endometritis and 5 patients had endometrial polyp while 12 patients were detected to have endometrial carcinoma and 2 had cervical carcinoma.

In a study conducted by Sujith K *et al.* (2014) titled "Study of histopathological patterns of endometrium in abnormal uterine bleeding" Endometrial hyperplasia was the most common histopathological findings in 25% of the patients followed by secretary endometrium in 16.7% patients and proliferative phase in 12.2%. Malignancy was detected in 6.4% of cases and endometrial carcinoma was most common malignancy in 4.5%. [14]

Where as in a study conducted by Saraswath Doraiswami *et al.* (2011); in "study of endometrial pathology in abnormal uterine bleeding" normal cyclical endometrium was found in 28.4% proliferative pattern was seen in 20.5%. Endometrial hyperplasia in only 6.1%. carcinoma in 4.4% and endometritis in 4.2%, 20 Thus, our findings of study were consistent to other studies. [15]

In our present study the most recurring uterine lesion noted is myoma found in about 34% of circumstances, followed by Adenomyosis in about 34% of times. Endometrial polyp was noted at 21% of times and endometrial carcinoma was noted in 9% of times while cervical polyp and cervical carcinoma was noted at 1% of times.

In a study conducted by Bharat Talukdar *et al.* histopathologically myoma was seen in about 44.66% of cases and Adenomyosis was seen in 20.39% of cases. The findings are consistent with our study. [16]

Similarly, in a study conducted by N Bhavani *et al.* (2015), among the causes of abnormal uterine bleeding, Structural causes accounted for 54.5% of cases. 45.5% of them had nonstructural causes of

abnormal uterine bleeding. Myoma in 38.5% is the commonest Cause of abnormal uterine bleeding, followed by hyperplasia and malignancy 7.5%, adenomyosis in 6%, polyp in 2.5%.¹³ Thus findings in our study are consistent with other study.

In our study total no of cases diagnosed as myoma in MRI is 34 and in Histopathological Specimen who underwent Surgical treatment also diagnosed myoma as a total in 34 patients.

One case of endometrial polyp was diagnosed as myoma by TAS and one case of small myoma <1cm was diagnosed on Histopathological examination. Thus, the positive predictive value and Sensitivity of TAS in correlation to HPE for myoma was 98.28% while negative predictive value and specificity was calculated as 97.93%, in which both were high. The sensitivity and specificity of TAS for Diagnosing Polyp as compared to HPE was 52.87% and 98.56% while positive predictive value and negative predictive value were 95.10 % and 79.11% respectively.

In our present study transabdominal ultrasonography diagnosed a total of 34 patients as having Adenomyosis while histopathology detected a total of 34 patients as Adenomyosis TAS missed 18 cases as Adenomyosis and diagnosed 2 other lesions as Adenomyosis.

Thus, in our study statistical values of TAS with respect to HPE for adenomyotic lesions are; sensitivity came out to be 64.91%, specificity was found to be 95.84 % positive predictive value 94.69% and negative predictive value 29.78 %.

In a study conducted by Devimeenal Jaganathan *et al.* (2016) and published in 2017 titled as 'Comparison of the Diagnostic accuracy of Magnetic Resonance Imaginary (MRI) Trans abdominal ultrasonography (TAS), Trans Vaginal Ultrasonography (TVS) in characterizing the uterine mass lesion,"

Thus the findings in our study are consistent with other studies.[17]

Kang S *et al.* study on specificity of 5mm as the maximum normal uterine JZ thickness in detecting Adenomyosis concluded that if a diagnosis of Adenomyosis is based solely on JZ thickness of 5mm as upper limit of normal may result in a high false positive rate.¹⁸ Our study has showed 12 mm as minimal thickness in positive cases of adenomyosis and p value is found to be highly significant [18].

Conclusion

AUB existed among the parity-2 with chronic onset and associated with hypothyroidism being most common symptoms ranged from heavy menstrual bleeding to the post-menopausal bleeding. Endometrial biopsy sample revealed a wide range of findings from normal to endometrial carcinoma. Maximum histopathological finding detected in our study was of myoma and Adenomyosis.

Sensitivity and specificity for detecting myoma in respect to HPE was found high. Transabdominal ultrasound is low cost primary modality for screening and should include as a first line screening method. Though the investigation and management of AUB among the non- gravid women was confusing, histopathological diagnosis proved to be the gold standard.

References

1. Vilos GA, Tureanu V, Garcia M, Abu-Rafea B. The levonorgestrel intrauterine system is an effective treatment in women with abnormal uterine bleeding and anticoagulant therapy. *J Minim Invasive Gynecol.* 2009;16(4):480-4.
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):179-89.
3. Sharma A, Dogra Y. Trends of AUB in tertiary centre of Shimla hills. *J Midlife health.* 2013;4:67-8.
 4. Munro MG, Critchley HO, Fraser IS. FIGO menstrual disorders working group. The FIGO classification of causes of abnormal uterine bleeding in the reproductive years. *Fertil Steril.* 2011;95(7):2204-8.
 5. Dijkhuizen FP, Brodmann HA, Potters AE, Bongers MY, Heinz AP. The accuracy of transvaginal ultrasonography in the diagnosis of endometrial abnormalities. *Obstet Gynecol.* 1996;87:345-9.
 6. Emanuel MH, Verdel MJ, Wamsteker K, Lamemes FB. A prospective comparison of TVS and diagnostics hysteroscopy in the evaluation of patients with abnormal uterine bleeding. Clinical implications. *AM J Obstet Gynaecol.* 1995;172(4):547-52.
 7. Baggish MS. Operative hysteroscopy. In: Rock JA, Jones HW III, editors. *TeLinde's Operative Gynecology* 9th edition. Philadelphia: Lippincott Williams and Wilkins; 2003:379-411.
 8. Taneja P, Duggal BS. Hysteroscopy: past, present and future. *Med J Armed Force India.* 2002;58:293- 4.
 9. de Vries LD, Dijkhuizen FP, Mol BW, Brölmann HA, Moret E, Heintz AP. Comparison of transvaginal sonography, saline infusion sonography and hysteroscopy in premenopausal women with abnormal uterine bleeding. *J Clin Ultrasound.* 2000;28(5):217-23.
 10. Fraser IS, Critchley HO, Munro MG, Broder M. A process designed to lead to international agreement on terminologies and definitions used to describe abnormalities of menstrual bleeding. *Fertil Steril.* 2007; 7(3):466-76.
 11. Fraser IS, Critchley HO, Munro MG, Broder M. Can we achieve international agreement on terminologies and definitions used to describe abnormalities of menstrual bleeding? *Hum Reprod.* 2007; 2(3):635-43.
 12. Restrepo, L. E. D. L. P, Ávila, J. L. B, Moreno, K. S. H. ., Noriega, L. G. E. ., Castellan, Ángela M. A. ., & Pérez, F. A. T. . (2021). Pelvic Ring Fracture as a Potential Risk of Death in Politraumatic Patients. *Journal of Medical Research and Health Sciences*, 4(9), 1446–1450.
 13. Ghazala Rizvi, Harishankar Pandey, Hema Pant, Sanjay Singh Chufal, and Prabhat Pant Histopathological correlation of adenomyosis and leiomyoma in hysterectomy specimens as the cause of abnormal uterine bleeding in women in different age groups in the Kumaon region: A retrospective study, *J Midlife Health.* 2013; 4(1):27-30.
 14. N Bhavani, Avanthi Sathineedi Aradhana Giri, Sangeeta Chippa, V S Prasannakumar reddy A study of correlation between abnormal uterine bleeding and thyroid dysfunction. *International Journal of Recent Trends in Science and Technology.* 2015; 14(1):131-135.
 15. Sajitha K. Shetty K Padma, Jayaprakash Shetty K, Kishan Prasad HL, Harish S Permi. Panna Hedge Study of histopathological patterns of endometrium in Abnormal uterine bleeding year. *Chris med Journal of health and research* 1(2):76-81.
 16. Saraswathi Doraiswami, Thanka Johnson, Shalinee Rao, Aarthi Rajkumar, Jaya Vijayaraghavan, Vinod Kumar Panicker Study of Endometrial Pathology in Abnormal Uterine Bleeding the *Journal of Obstetrics and Gynecology of India.* 2011; 61(4):426-430.
 17. Bharat Talukdar, Sangita Mahela; "Abnormal uterine bleeding in perimenopausal women coorelation

- with sonographic findings and histopathological examination of hysterectomy specimen” year. 2016; 17(2):73-77. doi 4 Jul-2016 Journal of midlife health.
18. Devimeenal Jagannathan, Arun Dilip Subramanian Comparison of The Diagnostic Accuracy of Magnetic Resonance Imaging (MRI), Transabdominal Ultrasound (TAS), Transvaginal Ultrasound (TVS) In Characterizing the Uterine Mass Lesions IOSR Journal of Dental and Medical Sciences. 2017; 16(2):65-74.
19. Kang S, Turner DA, Foster GS, Rapoport MI, Spencer SA, Wang JZ. Adenomyosis: specificity of 5 mm as the maximum normal uterine junctional zone thickness in MR images. AJR. American journal of Roentgenology. 1996; 166(5):1145-50