



A STUDY TO ASSESS THE DIAGNOSTIC ACCURACY OF HYSTEROSCOPY IN PRE AND POSTMENOPAUSAL WOMEN WITH ABNORMAL UTERINE BLEEDING

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ABSTRACT

Background: Abnormal uterine bleeding is one of the most common complaints that brings a woman to the gynecologist. Key to successful clinical management of AUB is to identify the cause behind it for which proper evaluation of the case is required. **Objectives:** This study was done to diagnose the cause of AUB and to assess the diagnostic accuracy of hysteroscopy and TVS and their correlation with the histopathology of endometrium. **Methods:** In this study 70 women with AUB were selected as they presented in OPD. After evaluation of clinical presentation, general, systemic and local examination, ultrasonography and hysteroscopy or D&C were performed on every patient and endometrial curetting were sent for histopathology. **Results:** We concluded that TVS is a simple and non-invasive technique and can be used as a first line diagnostic screening test but it may miss small lesions like polyps, submucous myomas. Hysteroscopy

has an advantage of targeted biopsy. **Conclusion:** TVS and hysteroscopy are complimentary to each other as TVS has better efficacy for uterine lesions and hysteroscopy has better efficacy for intracavitary lesions. The places where hysteroscopy is not available D&C still remains the diagnostic and therapeutic modality for AUB.

KEYWORDS: gynaecologist, submucous myomas.

INTRODUCTION

Abnormal uterine bleeding (AUB) is a condition where there is any deviation from a normal menstrual pattern. AUB is presented in 33% of women referred to gynecologists and this pattern increases to 69% in peri menopausal and post-menopausal women.^[1] It accounts for two third of hysterectomies.^[2] AUB is caused by spectrum of conditions which may include endocrinological disorders on one side to malignancy on the other hand and hence it's vital to diagnose the cause of bleeding. With increasing life expectancy, a healthy 50-year-old woman today spends as much as 40% of her life in postmenopausal state and about 10% of postmenopausal bleeding results from endometrial cancer.^[3] So it is imperative to understand and manage the postmenopausal period so as to allow women to enjoy optimum health. Anything that can significantly improve the accuracy of diagnosing the cause of bleeding can reduce the frequency of hysterectomy as a cure.

The problem is evaluated by careful and detailed history taking, physical examination and investigations. A visual and the histological assessment of the endometrium; therefore remains the cornerstone in the current practice. Various methods to evaluate the cause of AUB include USG pelvis, dilatation and Curettage (D & C) and hysteroscopy. The primary goal of the clinical evaluation of AUB is to establish a specific diagnosis in the most efficient and least invasive manner.^[4]

Transvaginal ultrasonography is currently used as a first investigation for the assessment of endometrium. It is a non-invasive method, well tolerated by patients and it allows immediate interpretation of the observed images. USG only shows the uterine contour, endometrial thickness and the status of the ovary, but may fail to provide adequate information regarding the histopathology of endometrium.^{[5] [6,7]}

Uterine curettage has been, for decades, the universal procedure for diagnosis of intrauterine diseases. Although minor operation, it is an invasive procedure as well. It also has a

therapeutic value as it controls bleeding. If a greater portion of endometrium is affected accuracy of dilatation and curettage is good. With focal lesion however its accuracy is less as dilatation & curettage is a blind procedure. It will only scrap less than 50% of the endometrial cavity in 60% of the patients.^[8]

So there are higher chances of missing a malignancy. The fallacies of curettage and other methods suggested the need for better method of evaluation of AUB.

Hysteroscopy has the advantage of providing a direct visualization of the uterine cavity and the endometrium, allowing guided biopsy of any suspected lesion. It can lead to more accurate diagnosis and specific surgical or medical treatment directed at the specific pathology and can avoid the need for major surgery. What attracts hysteroscopy is its transition from diagnostic to therapeutic tool. Hysteroscopy is an expensive procedure, requires a trained personnel and equipment to perform it. This study was conducted in order to ascertain the place of hysteroscopy in evaluation of abnormal uterine bleeding and to correlate the findings on USG, D&C and those found on histopathological examination.^[9,15]

AIMS AND OBJECTIVES

This study was done to diagnose the cause of AUB by USG, hysteroscopy and D&C and to correlate the above findings with histopathological examination and to observe the sensitivity and specificity of these procedures.

MATERIAL AND METHODS

This study was Prospective Observational Cohort study which was conducted in the department of the Obstetrics and Gynaecology of tertiary care centre of North India after ethical clearance from the institute. Study was conducted on total 70 women with age more than 35 years.

In the study (Group A) comprises 35 patients in whom USG was followed by D&C and histopathology and **Group B** Comprised 35 patients in whom USG was followed by hysteroscopy and histopathology.

Inclusion Criteria

All pre and postmenopausal women with AUB and endometrial thickness being more than 5mm.

Exclusion criteria

1. IUCD (Intrauterine contraceptive devices)
2. On medications like steroids, neuroleptics, anticoagulants and cytotoxic agents.
3. Bleeding disorders
4. Uncontrolled thyroid disease

METHODOLOGY

A detailed work up of all the patients i.e detailed history including menstrual history, obstetrical history, past and family history, general physical examination, systemic examination, per speculum examination, bimanual pelvic examination and Ultrasonography lower abdomen was done for every patient. Appearance of the endometrial stripe was recorded as either normal or abnormal; a specific note was made of any focal lesion seen in terms of an endometrial polyp, submucous fibroid, intramural fibroid, or thickened endometrium. The normal endometrium in a premenopausal woman varies in thickness according to the menstrual cycle from 4mm to 12mm and in postmenopausal women; it should be less than 5mm. After diagnosing the patient was advised hysteroscopy or D&C.

Statistical Analysis

Statistical analysis was done using Statistical package for Social Scientists (SPSS, version 17). The anonymised data was analyzed by an independent person. analysis of individual data was done by chi- square test. A p- value of < 0.05 was regarded as statistically significant.

RESULT

While comparing the Demographic characteristics of both the groups, no significant difference was found in terms of age, parity, socioeconomic status, educational status etc. The mean age of subjects in the present study was 49 years. Maximum number of patients (40% in group A and 42.9% in group B) fell in the age group 41- 50 years.

Table 1: Pattern of AUB.

Abnormal Uterine bleeding	GROUP				Total		Chi-square value	p-value
	GROUP A		GROUP B		No.	%age		
	No.	% age	No.	% age				
Heavy	20	57.1	13	37.1	33	47.1	2.809	0.094
Dysmenorrhea	3	8.6	0	0.0	3	4.3	3.134	0.077
Frequent	1	2.9	1	2.9	2	2.9	0.000	1.000
Infrequent	0	0.0	1	2.9	1	1.4	1.014	0.314
Irregular	1	2.9	8	22.9	9	12.9	6.248	0.012
Post Menopausal	10	28.6	12	34.3	22	31.4	0.265	0.607
Total	35	100.0	35	100.0	70	100.0		

In both group A and B heavy menstrual bleeding was most common presentation comprising 57.1% and 37.1% subjects respectively. Irregular menstrual bleeding was present in 2.9% subjects in group A and 22.9% subjects in group B. Irregular menstrual bleeding was statistically significant with p- value= 0.012.

Table 2: USG Findings(Uterus And B/L Adnexa).

TVS Findings	GROUP				Total		Chi-square value	p-value
	Group A		Group B		No.	%age		
	No.	%age	No.	%age				
Hyperplasia	13	31.0	25	48.1	38	40.4	8.289	0.004
IM Fibroid	9	21.4	8	15.4	17	18.1	0.078	0.78
SM Fibroid	3	7.1	4	7.7	7	7.4	0.159	0.69
Adenomyosis	3	7.1	5	9.6	8	8.5	0.585	0.452
Growth	3	7.1	1	1.9	4	4.3	1.061	0.303
Polyp	1	2.4	4	7.7	5	5.3	1.938	0.164
Ovarian Cyst	5	11.9	3	5.8	8	8.5	0.565	0.452
Normal	5	11.9	2	3.8	7	7.4	1.429	0.214

Most common finding on ultrasound was hyperplasia which was 30.9% cases in group A and 48.1% in group B. Polyp was seen in 7.7% cases in group B and 2.4% in group A. Adenomyosis was seen in 7.1% cases in group A and 9.6% in group B.

Table 3: Endometrial Thickness by TVS In Perimenopausal Age Group.

ET(mm)	GROUP				Total		Chi-square value	p-value
	Group A		Group B		No.	%age		
	No.	%age	No.	%age				
≤ 12 mm	19	76.0	10	43.5	29	60.4	4.769	0.029
12-20 mm	6	24.0	10	43.5	16	33.3	1.296	0.255
20-30 mm	0	0.0	1	4.3	1	2.1	1.014	0.314
≥ 30 mm	0	0.0	2	8.7	2	4.2	2.059	0.151
Total	25	100.0	23	100.0	48	100.0		

24% women in group A and 43.5% women in group B had ET between 12- 20 mm. In group B 4.3% subjects had ET between 20-30 mm and 8.7% subjects had ET > 30 mm.

Table 4: Endometrial Thickness by TVS In Postmenopausal Age Group.

ET (mm)	GROUP				Total		Chi-square value	p-value
	Group A		Group B					
	No.	%age	No.	%age	No.	%age		
≤ 5 mm	3	30.0	0	0.0	3	13.6	3.134	0.077
6-10 mm	4	40.0	4	33.3	8	36.4	0.000	1.000
11-15mm	1	10.0	5	41.7	6	27.3	2.417	0.088
16-20 mm	1	10.0	1	8.3	2	9.1	0.000	1.000
≥ 20 mm	1	10.0	2	16.7	3	13.6	0.348	0.555
Total	10	100.0	12	100.0	22	100.0		

In postmenopausal patients, a normal endometrium was defined as having a double-wall thickness <5 mm.

Minimum value of ET was 3mm in group A. Maximum value was 43 mm in group A and 27 mm in group B. there was no subject with ET < 5mm in group B.

Table 5: D&C Findings of the Endometrial Curettings.

D&C FINDINGS	Frequency	Percent
Normal	23	65.7
Hyperplastic	7	20.0
Scant	3	8.6
Others	2	5.7

5.7% subjects had necrotic appearance on naked eye examination; which turned out to be malignant on histopathological examination.

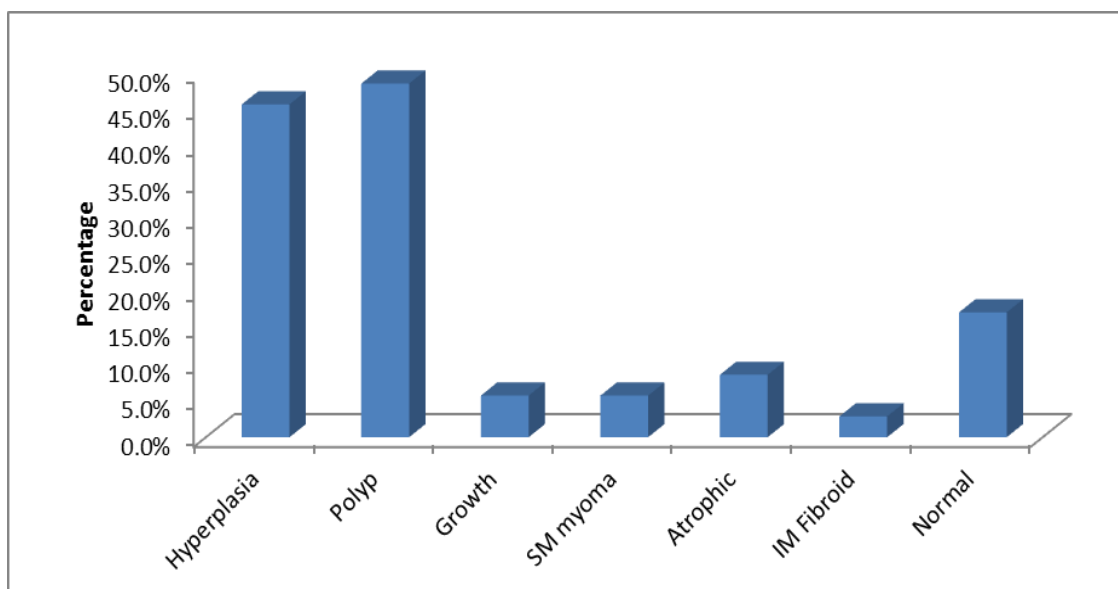
Hysteroscopy

Hysteroscopy followed by dilatation and curettage was done. Findings of hysteroscopy were obtained as follows:-

Table 6: Hysteroscopy Findings.

HYSTEROSCOPY FINDINGS	Frequency	Percentage
Hyperplasia	16	34.0
Polyp	17	36.2
Growth	2	4.3
SM myoma	2	4.3
Atrophic	3	6.4
IM Fibroid	1	2.1
Normal	6	12.8

Maximum focal lesion seen was polyp accounting to 36.2% subjects. Hyperplasia was seen in 34% patients. Growth suggestive of endometrial carcinoma was seen in 4.3% subjects. Submucous myoma was seen in 4.3% subjects and intramural myoma was seen in 2.1% subjects. Endometrial polyp seen was in 36.2% subjects followed by hyperplasia in 34% cases as per hysteroscopic evaluation.



Histopathological Examination

Endometrial curettings obtained after either alone Dilatation and curettage or preceded by hysteroscopy were sent for histopathological examination. The pattern of histopathology obtained was as follows:-

Table 7: Histopathological Findings.

Histopathological Findings	GROUP				Total		Chi-square value	p-value
	Group A		Group B					
	No.	% age	No.	% age	No.	% age		
Hyperplasia	6	15.4	9	21.9	15	18.8	0.764	0.382
Polyp	4	10.2	12	29.3	16	2.0	5.185	0.022
Endometrial Ca	3	7.6	4	9.8	7	8.8	0.159	0.69
SM Myoma	2	5.1	2	4.8	4	5.0	0.000	1.000
Hormonal	3	7.6	2	4.8	5	6.3	0.215	0.643
Normal	17	43.6	6	14.6	23	2.9	7.835	0.005
Atrophic	2	5.1	2	4.8	4	5.0	0.000	1.000
Adenomyosis	2	5.1	4	9.7	6	7.5	0.729	0.393

Hyperplasia was seen in 15.4% subjects in group A and 21.9% in group B. Polyp was seen in 10.2% subjects in group A and 29.3% in group B. Endometrial carcinoma was seen in 7.6%

subjects in group A and 9.8% subjects in group B. Submucous myoma were seen in 5.1% subjects in group A and 4.8% in group B.

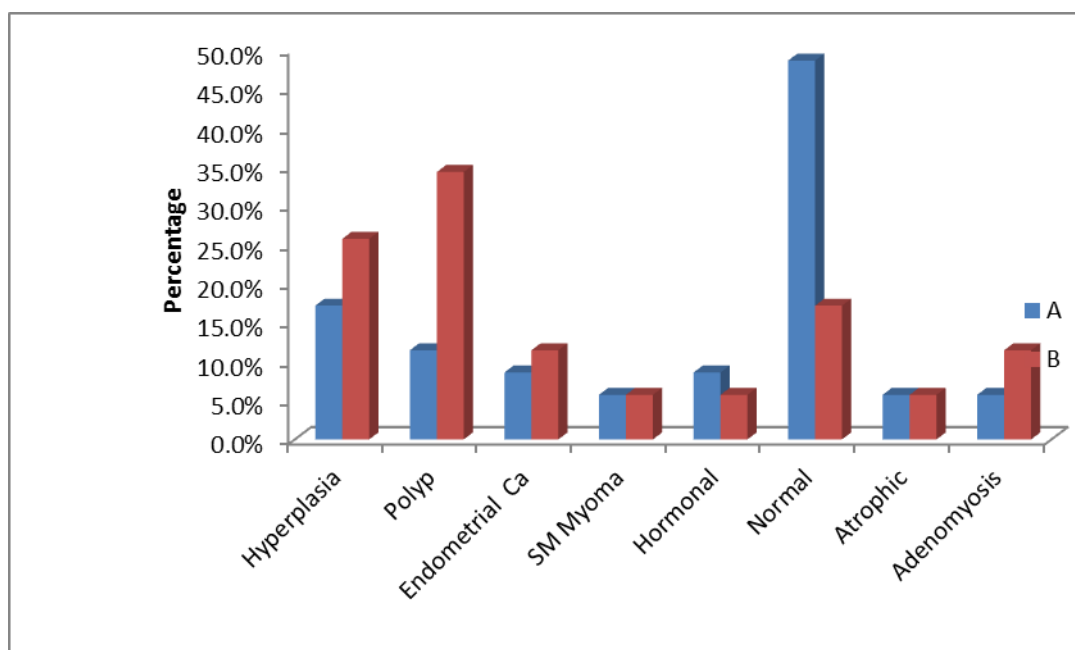


Table 7a: Correlation of Findings of Histopathology, D&C and TVS.

Histopathology Indings	No.	D & C Findings	TVS Findings
Hyperplasia	6	Necrotic = 1 Hyperplastic= 5	Hyperplasia = 5 IM Fibroid = 1
Polyp	4	Normal = 2 Scant = 1 Hyperplasia= 1	Hyperplasia = 1 Polyp = 2 Normal = 1
Carcinoma	3	Hyperplastic= 3	Growth = 3
Adenomyosis	2	Normal= 2	Adenomyosis= 2
Atrophic	2	Scant = 2	Normal = 2
Normal	17	Normal = 15 Scant = 2	Hyperplasia = 4 Adenomyosis= 1 IM Fibroid = 7 SM Fibroid = 1 Normal = 4

Taking histopathology as gold standard, findings of D&C and TVS are correlated. TVS is better in diagnosing endometrial hyperplasia, adenomyosis. The findings suggestive of endometrial carcinoma were almost accurate as reported by TVS. But TVS could not diagnose atrophic endometrium in postmenopausal women.

Table 8: Correlation of Findings of Histopathology, Hysteroscopy and TVS.

Histopathology Findings	No.	Hysteroscopic Findings	TVS Findings
Hyperplasia	9	Hyperplasia = 8 Polyp = 1	Hyperplasia = 8 SM Fibroid = 1
Polyp	12	Polyp = 12	Hyperplasia = 9 Polyp = 3
Adenomyosis	4	Normal= 4	Adenomyosis = 4
Carcinoma	4	Carcinoma = 4	Carcinoma = 1 Hyperplasia = 3
SM Myoma	2	SM myoma= 2	SM Myoma = 1 Hyperplasia = 1
Normal	9	Hyperplasia = 2 Normal = 7	Hyperplasia = 1 Adenomyosis= 2 IM Fibroid = 2 Normal = 5

Taking histopathology as gold standard findings of hysteroscopy and TVS were correlated. Hysteroscopy was better diagnostic as well as therapeutic modality for focal lesions like polyp, submucous myoma. TVS was equally efficacious for hyperplasia. Adenomyosis was better diagnosed by ultrasound whereas hysteroscopy reported all cases as normal. In patients with either proliferative or secretory endometrium referred to as normal histopathology as mentioned in the table. For these subjects hysteroscopy was better than TVS in ruling out normal from abnormal cases.

Sensitivity, specificity, PPV and NPV of hysteroscopy for the cases of AUB is 83.9%, 77.8%, 92.9% and 58.3% respectively.

Sensitivity, specificity, PPV and NPV of TVS values in the evaluation of AUB is 54.8%, 71.4%, 89.5% and 39.1% respectively in group B and 70.6%, 51.8%, 48% and 73.7% respectively in group A.

1. Sensitivity, specificity, PPV and NPV of D&C for diagnosing AUB is 52.9%, 88.24%, 81.82% and 65.22% respectively.
2. Hysteroscopy is more accurate than TVS for focal endometrial lesions like polyp, submucous myoma, and atrophic endometrium.
3. Hysteroscopy and TVS together are complimentary in detecting endometrial hyperplasia and carcinoma.
4. Adenomyosis was detected on sonography and not on hysteroscopy.

5. The cut off value chosen for premenopausal and postmenopausal age group which was 12 mm and 5 mm respectively; and there was no endometrial carcinoma or premalignant lesion seen below this cut off value.
6. Endometrial cancer was not present in perimenopausal age group. Premalignant lesions like hyperplasia with or without atypia were seen in 11.4% and 10% subjects respectively, so the evaluation of AUB and further treatment can downregulate the endometrial cancer.
7. The prevalence of endometrial carcinoma is seen only in postmenopausal age group women. So it is mandatory to thoroughly investigate women with postmenopausal bleeding.

DISCUSSION

The term Abnormal Uterine Bleeding is defined as any variation from the normal menstrual cycle, and includes changes in regularity, frequency of menses, duration of flow, or in amount of blood loss. It not only affects the quality of life, day-to-day living but can have serious adverse consequences as anemia or may be the result of underlying malignancy.^[10]

The term perimenopause or climacteric generally refers to the time period in the late reproductive years, usually late 40s to early 50s. Characteristically, it begins with menstrual cycle irregularity and extends to 1 year after permanent cessation of menses. The more correct terminology for this time is menopausal transition. This transition typically develops over a span of 4 to 7 years, and the average age at its onset is 47 years.^[12]

Endometrial assessment by endometrial biopsy or curettage is indicated in the perimenopausal and postmenopausal years in order to exclude endometrial hyperplasia or carcinoma.^[14]

Transvaginal sonography was offered as initial non-invasive investigation. Further evaluation was done by endometrial curettage either done by dilatation and curettage or by hysteroscopy. The procedure was done according to the approach that patient choose. Henceforth, the patients were divided into groups- group A, undergoing dilatation and curettage and group B, undergoing hysteroscopy followed by curettage. Various parameters which were compared between the two groups are as follows:^[15-22]

In this study there were 48 subjects in perimenopausal age group and 22 in postmenopausal. Most common finding reported by TVS was endometrial hyperplasia in 40.4% subjects

followed by intramural fibroid in 18.1% subjects. Adenomyosis was reported in 8.5% subjects and polyp in 5.3% subjects. While findings suggestive of endometrial cancer were reported in 4.3% subjects. The mean value of ET among perimenopausal women was 8.58 in group A and 15.4 in group B. 24% women had thickened endometrium in group A and 39.6% in group B. No endometrial cancer was detected in perimenopausal age group. In our study 22 women were postmenopausal. The mean value of ET was 12.4 in group A and 13.9 in group B. 70% subjects in group A and 100% in group B had thickened endometrium. TVS findings suggestive of endometrial cancer was reported in 4.3% subjects.^[23]

D&C

As D&C was only a blind procedure, we could have impression of naked eye appearance of the endometrial curettings obtained. It is an old age procedure of diagnosing the pathology of AUB, though it is a blind procedure still where the facility of hysteroscopy is not available, it remains the procedure to diagnose benign and malignant conditions of the endometrium. We took histopathology as gold standard; sensitivity, specificity, PPV and NPV of D&C were 52.9%, 88.24%, 81.82% and 65.22% respectively. Whereas for TVS values were 70.6%, 51.8%, 48% and 73.7% respectively. In the present study 5 patients continued to have AUB after D&C; hysterectomy was done. The posthysterectomy histopathology report revealed 3 (75%) endometrial polyps and 2(50%) submucous myomas which were missed while blind D&C.^[26,27]

Studies	Hysteroscopy				TVS			
	Sensitivity	Specificity	PPV	NPV	Sensitivity	Specificity	PPV	NPV
Garg et al (2008) (27)	85.7%	56%	73.1%	73.6%	84.2	72.2	84.2%	72.7%
Gupta M et al(2014) (42)	85.1%	89.6%	89.6%	88.9%	82.9%	79.2%	79.2%	82.6%
Verma et al(2014) (43)	89.8%	97.6%	97.9%	90.6%	73.1%	95.8%	95%	76.6%
Present study (2015)	83.9%	77.8%	92.9%	58.3%	54.8%	71.4%	89.5%	39.1%

CONCLUSION

TVS is a simple, non-invasive and higher acceptable technique and can be used as a first line choice diagnostic screening test in the investigation of women with perimenopausal and

postmenopausal bleeding, but it may miss some small lesions like polyps, submucous myomas. TVS and hysteroscopy are complimentary to each other as TVS has better efficacy for uterine lesions and hysteroscopy has better efficacy for intracavitary lesions. Endometrial curettage integrated with hysteroscopy should be used for achieving final diagnosis as it has the advantage of permitting a targeted biopsy thus reducing the possibility of false negatives. The institutions where hysteroscopy is not available D&C still remains the diagnostic and therapeutic modality for of AUB.

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