

# Efficacy of Ultrasonography and Hysteroscopy and Their Correlation with Endometrial Histopathology in a Case of Abnormal Uterine Bleeding In Late Reproductive Age

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## ABSTRACT

**Background:** Abnormal uterine bleeding (AUB) 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. In current scenario of increasing cost awareness and taking risk related to invasive procedure like hysteroscopy, a balance has to be achieved between the practices of randomly doing all investigation versus a condition appropriate approach. This study was done to compare efficacy of pelvic ultrasonography & hysteroscopy in cases of AUB and their correlation with the histopathology of endometrium. **Methods:** In this study 120 women with AUB were selected as they presented in OPD. After evaluation of clinical presentation, general, systemic and local examination, ultrasonography and hysteroscopy were performed on every patient and endometrial curettage were sent for histopathology. **Result:** We concluded that ultrasonography (TAS and TVS) has a better efficacy to detect uterine cause of AUB and hysteroscopy is better for detecting intracavitary lesions. **Conclusion:** Ultrasonography has a better efficacy to detect uterine cause of AUB and hysteroscopy is better for detecting intracavitary lesions. However a thorough history and detailed clinical examination plays a very important role in narrowing the differential diagnosis of AUB.

**Keywords:** Abnormal uterine bleeding, Ultrasonography, Hysteroscopy, Histopathology, Endometrium.

## INTRODUCTION

Abnormal uterine bleeding is defined as any deviation from the normal menstrual cycle that include change in regularity, frequency of menses, duration or amount of bleeding during or in between periods.<sup>[1]</sup> AUB is responsible for about 30% of patient who attend gynaec outpatient department amongst women in reproductive age group and significantly impacts quality of life and imposes financial burden.<sup>[2]</sup> The International Federation of Gynecology and Obstetrics working group on menstrual disorders has proposed a classification system (PALM-COEIN) for causes of the AUB.<sup>[3]</sup> Problem is evaluated by detailed history taking, physical examination and investigations. A careful history taking and physical examination helps to narrow down the differential diagnosis and further investigation is required to finalize the pathology causing abnormal bleeding.<sup>[4]</sup>

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Common investigations required are biochemical or serological tests, pap smear, pelvic ultrasonography, diagnostic hysteroscopy and histopathological evaluation.

Ultrasonography (TAS and TVS) is an inexpensive, non-invasive and a convenient way to assess the uterine pathology. Therefore, it is recommended as a first line diagnostic tool for assessing uterine pathology in women presenting with AUB.<sup>[5]</sup> Transvaginal ultrasound can be valuable aid in evaluating the woman presenting with complaints of abnormal vaginal bleeding by demonstrating anatomical abnormality not discernible on pelvic examination such as small cyst and leiomyoma and in evaluating the endometrium in terms of thickness and ovulatory and hormonal status of the endometrium.

Hysteroscopy directly evaluates the uterine cavity which is reliable method for investigating women with abnormal uterine bleeding and is easy to perform and widely available in our setup. Hysteroscopy can accurately detect endometrial hyperplasia, endometrial polyp and submucosal myoma.<sup>[6]</sup> Hysteroscopy is recommended to further evaluate the endometrium in women with abnormal

bleeding when the endometrial echo is normal on transvaginal sonography.<sup>[7]</sup>

Objectives of present study were to estimate the diagnostic accuracy of two dimensional ultrasound (TAS and TVS) and hysteroscopy in evaluation of uterine lesion in late reproductive age women with abnormal uterine bleeding and to compare the case detection rate (CDR) of USG and hysteroscopy and correlate the efficacy of both in diagnosing uterine pathology in abnormal uterine bleeding.

## MATERIALS AND METHODS

This prospective study was conducted in department of Obstetrics and Gynecology in SCB Medical College, Cuttack from June 2017 to June 2018. This study was done on women presenting to the gynecological OPD with complaint of abnormal uterine bleeding in late reproductive age group. The inclusion and exclusion criteria were applied and the women who were eligible to participate and who gave written consent were enrolled in the study. Out of total 155 patients, 35 patients were excluded and rest 120 women who met the inclusion criteria were selected and after explaining the procedure, the consent form written in their own language was signed.

### Inclusion criteria

Patient having following characteristic were included:

1. Late reproductive age group (30-50 years)
2. Having abnormal uterine bleeding

### Exclusion criteria

1. Acute pelvic infection
2. Unmarried girls
3. Pregnant women
4. Systemic causes of bleeding
5. Vaginal or cervical causes of bleeding
6. Bleeding disorder

After selecting the patients randomly in OPD, a detailed clinical history was taken and thorough clinical examination done as per proforma. The obstetrical history included parity, mode of delivery, abortions and contraceptive use. Detail menstrual history regarding the cycle length, no of days of flow, type and amount of abnormal bleeding was taken. Duration of complain and any relevant preceding events like IUCD insertion, abortion, etc.

was also noted. Per speculum examination was done to rule out cervical and vaginal causes and PAP smear was taken. Per Vaginal examination was done to find out any uterine, cervical or adnexal pathology. Laboratory investigations including CBC, coagulation profile, thyroid profile, blood sugar, liver and kidney function and pregnancy test were done.

After excluding the patients as per exclusion criteria, consent was taken from the rest 120 eligible patients and they were subjected to pelvic ultrasonography (TAS and TVS) and various sonographic parameters such as endometrial thickness, uterine pathology, adnexal and any other pelvic pathology was noted. Then diagnostic hysteroscopy was carried out for all patients under general anesthesia and biopsy taken for histopathological study. After tabulating the findings of USG and Hysteroscopy it was compared with histopathology of endometrium and the case detection rate of USG and Hysteroscopy was calculated.

## RESULTS

It was observed in our study that incidence of abnormal uterine bleeding is more common in the age group of 36 to 45 years. 36 to 40 years age group constitutes maximum 47 (39.2%) cases and 41 to 45 years constitute about 33 (27.5%) cases.

AUB is more common in multiparous women. In our study 78 (65%) women are multiparous, 36 (30%) women are primiparous and only 5% are nulligravida.

Among the different patterns of abnormal uterine bleeding, menorrhagia is most common and constitutes 45% of cases. Menometrorrhagia constitute 28.3% cases and polymenorrhea constitutes 16.7% of the total cases as shown in [Table 1]

The histopathology of endometrium shows 49 (40.8%) cases with proliferative endometrium and 71 (59.2%) cases with secretory endometrium.

In 64 cases USG (TAS and TVS) is suggestive of a uterine cause of AUB and in remaining 56 cases it suggests dysfunctional uterine bleeding (DUB) as a cause of AUB as shown in [Table 2]. So more than half of the cases of AUB are due to uterine pathology and not due to ovarian dysfunction. The data were then compared with histopathology to know the accuracy of USG in [Table 3].

**Table 1: AUB pattern in different age group.**

Age	Menorrhagia	Metrorrhagia	Menometrorrhagia	Polymenorrhea	Polymenorrhagia	Total
31-35	10	1	6	2	4	23 (19.2%)
36-40	21	3	14	1	8	47 (39.2%)
41-45	14	2	10	2	5	33 (27.5%)
46-50	9	1	4	0	3	17 (14.1%)
Total	54 (45%)	7 (5.8%)	34 (28.3%)	5 (4.2%)	20 (16.7%)	120 (100%)

Hysteroscopy was able to detect intracavitary lesions like polyp in 18 (15%) cases and submucosal fibroid in 3 cases. Endometrial hyperplasia noticed in 11

cases as shown in diagram-4. So total cases of AUB (both polyp and submucosal fibroid) detected by hysteroscopy were 21. The total cases of AUB was

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found to be 80 and dysfunctional bleeding were 40 combining the USG finding, hysteroscopic feature and endometrial histopathological study. The hysteroscopic findings were compared with histopathology in [Table 4]. Hence AUB case detection rate of hysteroscopy is 26.25%.

**Table 2: USG finding in AUB**

Sl No	USG finding	Number	Percentage
1	Normal	56	46.7
2	Bulky	15	12.5
3	Fibroid	22	18.3
4	Adenomyosis	12	10.0
5	Thickened Endo./Polyp	15	12.5

**Table 3: USG vs Histopathology**

USG		Proliferative	Secretory	Total
Pathological	N	19	45	64
	%	38.8%	63.4%	53.3%
Normal	N	30	26	56
	%	61.2%	36.6%	46.7%
Total	N	49	71	120
	%	100%	100%	100%

**Table 4: Hysteroscopy vs Histopathology**

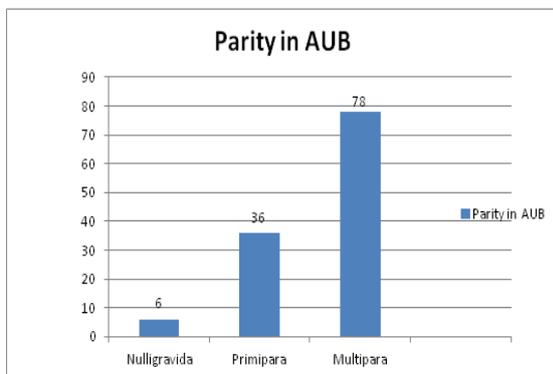
Hysteroscopy		Proliferative	Secretory	Total
SOL in the cavity	N	8	13	21
	%	16.3%	18.3%	17.5%
Endometrial hyperplasia	N	1	10	11
	%	2.1%	14.1%	9.2%
Normal finding	N	40	48	88
	%	81.6%	67.6%	73.3%
Total	N	49	71	120
	%	100%	100%	100%

**Table 5: CDR of various diagnostic modalities of AUB**

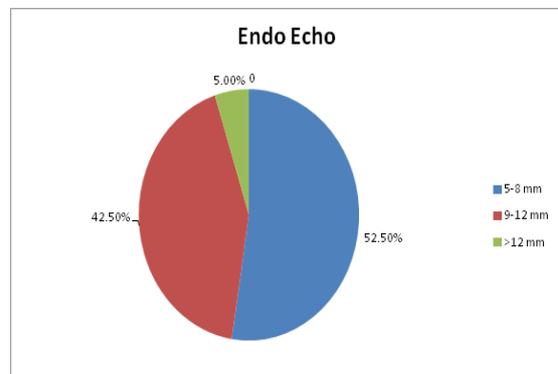
Diagnostic Modality	AUB	DUB	Case Detection Rate (CDR)
Clinical Examination	75	45	93.75%
Ultrasonography	64	56	80.0%
Hysteroscopy	21	99	26.25%
Ultrasonography + Hysteroscopy guided biopsy	80 (5 common cases in USG and hysteroscopy)	40	100%

**Table 6: Comparison of different studies on AUB**

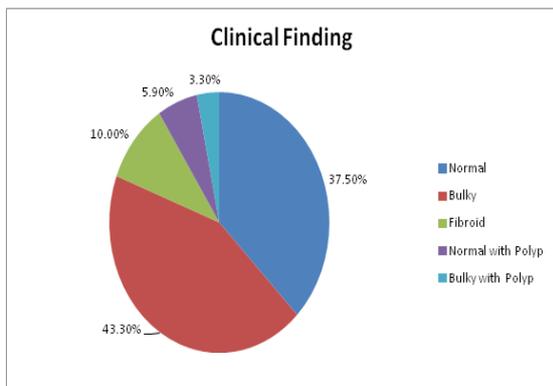
	Pillai S. et al <sup>[8]</sup>	Kumari M. et al <sup>[9]</sup>	Patil R. et al <sup>[10]</sup>	Present Study
Most common Age Group		31-40 yr (37%)	31-40 yr (45%)	36-40 yr (39.2%)
Most common Parity		Multi (61%)	Multi (71%)	Multi (65%)
Most common pattern of AUB	Menorrhagia (46.5%)	Menorrhagia (39%)	Menorrhagia (73%)	Menorrhagia (45%)
Most common endomet. histology		Secretory (57%)	Hyperplasia (40%)	Secretory (59.1%)



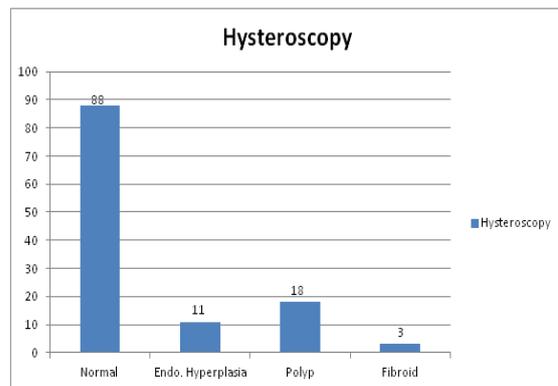
**Figure 1: Parity in AUB**



**Figure 3: Endometrial thickness in USG**



**Figure 2: Clinical findings of AUB**



**Figure 4: Hysteroscopic finding in AUB**

## DISCUSSION

Abnormal uterine bleeding is the most common complaint among reproductive age women attending gynecology OPD.

### Distribution according to age

In our present study most common age group presented with AUB is 36-40 years comprising 39.2% of total patients. Second most common age group was 41-45 years with 27.5% women. So AUB is most common in the age group of 36 to 45 years.

As per Kumari M. et al most common age group presenting with AUB is 31 to 40 years comprising 37% women.<sup>[9]</sup> 45% women present with Abnormal uterine bleeding in the age between 31-40 years as per Patil R. et al.<sup>[10]</sup>

### Distribution according to parity

Multiparous women are more affected in late reproductive age. In our study, multiparous women accounted for 65% cases of AUB, primipara for 30% and nulligravida for 5% cases only. 61% patients with AUB are multiparous as per Kumari M. et al and 71% as per Patil R. et al.

### Distribution according to bleeding pattern

In present study, analysis of patients according to bleeding pattern, the most common bleeding pattern was menorrhagia (45%) which was comparable to the study by Pillai S et al. They had 46.5% patients with menstrual complaints of menorrhagia.<sup>[8]</sup> Kumari M. et al. reported a 39% incidence of menorrhagia in their study.<sup>[9]</sup> Shobhitha et al showed menorrhagia in 40% patients of reproductive age.<sup>[11]</sup> Other bleeding patterns in present study are menometrorrhagia (28.3%), Polymenorrhagia (16.7%), Metrorrhagia (5.8%) and polymenorea (4.2%).

### Distribution according to USG finding

Most common uterine pathology detected by USG was fibroid uterus consisting of 18.3% cases. Adenomyosis(10%), Polyp(7.5%) and thickened endometrium (5%) can also be detected by USG as a cause of abnormal uterine bleeding.

### Endometrial thickness in USG

In this study, on transvaginal USG an endometrial thickness 5 to 8 mm was observed in maximum patients. 6 patients showed endometrial thickness more than 12 mm in USG which was confirmed by hysteroscopy and endometrial biopsy were studied to rule out cancer. In most of studies it revealed that endometrial thickness of 8 mm could be taken as cut off in perimenopausal women and in present study the similar finding was observed.

### USG in detection of cause of AUB

The case detection rate (CDR) of ultrasonography in the present study was 80% (64 detected out of 80

cases) in late reproductive age women with AUB. Kumari M. et al reported sensitivity of 63% in their study.

Emanuel MH et al reported sensitivity of USG in detecting AUB are 96%, Haq K. et al as 94%, Saidi MH et al as 95% respectively.<sup>[12-14]</sup> Aslam et al reported sensitivity and specificity of transvaginal sonography 81.3% and 73.6% respectively.<sup>[15]</sup>

### Hysteroscopy in detection of cause of AUB

In current study, hysteroscopy showed intrauterine pathology in 21 cases. Polyp was found in 18 (15% of cases) and submucosal fibroid in 3 (2.5% of cases). Hence hysteroscopy showed a higher sensitivity in diagnosis of intra uterine pathology such as polyp and sub mucosal fibroid as compared to USG which could detect only 5 cases. The case detection rate of hysteroscopy correlates with Patil SG et al which showed endometrial polyp in 9% and sub mucosal myoma in 11%.<sup>[16]</sup>

In present study, the case detection rate of hysteroscopy was 26.25% (21 detected out of 80) as shown in [Table 5]. Kumari M. et al showed sensitivity of 45% in their study. However CDR of hysteroscopy in our study came out to be 100% which correlates with Saidi MH et al (sensitivity of 78%) and Acharya V et al (almost 100%).<sup>[14,17]</sup>

After analysing different parameters for the evaluation of a case of abnormal uterine bleeding, following results are summarized.

1. Most common age for AUB is 36-40 years.
2. AUB is more common in multiparous women.
3. Most common pattern of AUB in late reproductive age group is menorrhagia.
4. Most common uterine pathology to cause AUB is fibroid uterus.
5. Ultrasonography is more efficacious than hysteroscopy to detect the pathology of AUB.
6. Hysteroscopy has a greater sensitivity to detect intracavitary lesion such as polyp and submucosal fibroid.
7. USG with hysteroscopy guided biopsy has almost 100% case detection rate in patients with AUB in late reproductive age.

## CONCLUSION

Thorough clinical examination has an important role in the diagnosis of abnormal uterine bleeding. Overall, USG is superior to hysteroscopy in pathology detection in AUB cases. However hysteroscopy has a very high sensitivity (CDR almost 100 %) in detection of intracavitary lesions causing AUB. Ultrasonography with hysteroscopy guided endometrial biopsy can detect the cause in almost 100% women with AUB in late reproductive age.

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