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Original Research Article

Comparative study of hysteroscopy with ultrasonography and its correlation with histopathology in cases of abnormal uterine bleeding in perimenopausal women

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ABSTRACT

Background: The aim was to compare the diagnostic efficacy of ultrasonography (USG) and hysteroscopy in detecting uterine abnormalities in abnormal uterine bleeding (AUB) by correlating the results with histopathological examination. **Methods:** This prospective study was conducted among women attending gynecological OPD of Subharti medical college, Meerut over a period of two years from October 2019 to August 2021. A total of 100 perimenopausal women with AUB attending obstetrics and gynaecology OPD were included in this study. All patients underwent transvaginal scan to note down the endometrial thickness and to rule out uterine and adnexal pathology. All the patients underwent diagnostic hysteroscopy, followed by a biopsy of the endometrium using a curette. The endometrium was sent to the pathologist. Findings of these diagnostic modalities then correlated.

Results: Out of 100 women, USG detected that 54 patients (54%) had no pathology and 46 patients (46%) had abnormal findings, out of which maximum patients, 29 patients (63.04%) had endometrial hyperplasia. According to hysteroscopy, 46 patients (46%) had normal hysteroscopic findings while 54 patients (54%) had abnormal findings of which maximum were 18 patients (33.33%) who had endometrial hyperplasia. Histopathology findings revealed that 47 patients (47%) had normal findings and 53 patients (53%) had abnormal findings out of which maximum patients 20 (37.7%) had endometrial hyperplasia. In our study of 100 women with AUB, on USG only 1 patient had endometrial malignancy and the same was reported by hysteroscopy and histopathology.

Conclusions: In our study hysteroscopy proved to be highly sensitive and specific considering histopathology as gold standard. Ultrasonography has good sensitivity and specificity but less as compared to hysteroscopy.

Keywords: Hysteroscopy, Ultrasonography, Endometrial biopsy, Histopathology

INTRODUCTION

AUB is defined as bleeding that is excessive either in quantity or duration or occurs outside of normal cyclic menstruation and accounts for a great majority of hysterectomies.^{1,2} Management of AUB can be complex without a proper diagnosis. Dilatation and curettage is one of the commonest investigations employed in the evaluation of the causes of AUB. However, being an

invasive procedure, the discomfort caused to the patient and the numerous costs involved place a burden on its use as a screening tool. Moreover, D and C can have a diagnostic error ranging from 10 to 25%.³

Perimenopausal is the period 2-8 years preceding menopause and 1 year after the final menses. In premenopausal women any change in frequency, duration or amount of flow during menstrual cycle as well as

bleeding between cycles. Although irregular bleeding patterns are a normal and expected part of perimenopause, the incidence of uterine pathology and associated medical complications also increase in this age group.⁴

In present day practice, evaluation of a patient with AUB involves TVS, hysteroscopy and endometrial histopathology. SIS (saline infusion sonography) may be a good tool for the diagnosis of focal lesions.^{5,6}

Diagnostic techniques such as USG, despite being non-invasive, remains only a preliminary assessment tool that needs to be further confirmed with use of more precise techniques.^{7,8} The advantage of USG especially TVS is that it can be performed with empty bladder and is convenient for the patient and at the same time, it is suitable for getting more correct gynecological diagnosis, especially in fatty women with a thick abdomen. TVS is superior to CT and approaches MRI in its ability to provide information about myometrial, cervical and perhaps, myometrial invasion of endometrial carcinoma. TVS is clinically established as the preferred technique for the evaluation of endometrial disorders, especially AUB.^{9,10}

Hysteroscopy is a surgical procedure in which a gynecologist uses a small lighted telescopic instrument called a hysteroscope to diagnose and treat many uterine disorders including abnormal bleeding. The ability to observe the entire endometrium provides accuracy and precision in sampling. Hysteroscopy not only offers a quick, safe and accurate diagnosis, but also curative in cases of fibroid polyps, intrauterine adhesions, menorrhagia and lost IUCD (intrauterine contraceptive device).¹¹

The more accurate the diagnosis of endometrial pathology better the chances for alternative treatment and hysterectomies could be avoided. The accuracy or the superiority of the relatively non-invasive methods like TVS, hysteroscopy and SIS over histopathology have not been clearly established. Thus, this study was undertaken to evaluate the role of hysteroscopic guided biopsy and ultrasonography in detection of AUB among perimenopausal women.^{12,13} This study aimed to compare the diagnostic efficacy of ultrasonography and hysteroscopy in detecting uterine abnormalities in AUB by correlating the results with histopathological examination.

METHODS

This prospective study was conducted among women attending gynecological OPD of Subharti medical college, Meerut over a period of two years. The study protocol for all procedures was approved by the institutional review board for ethical clearance of the institution and was performed in accordance with the code of ethics of the World medical association according to the Declaration of Helsinki of 1975, as revised in 2000. All patients were asked to sign a written consent form prior to commencement of the study. A total of 100

perimenopausal women with AUB attending obstetrics and gynaecology OPD were included in this study.

Patients in perimenopausal age group presenting with AUB and having post menstrual bleeding were included in the study. Pregnant women, vulval, vaginal or cervical cause of bleeding, known genito-urinary malignancies, known cases of bleeding disorders, drug intake causing bleeding (anti-coagulant, hormonal replacement therapy, contraceptives), known cases of endocrine disorders and PID women were excluded from the study.

Method

Detailed history of patient was taken which included presenting complaints, history of presenting illness, menstrual history, obstetric history, family, past and personal history followed by a complete general physical examination including pulse rates, blood pressure and temperature.

Systemic examination respiratory system, CVS, central nervous system was done to rule out any medical disorder.

The patient laid down in dorsal lithotomy position and with all asepsis per speculum was done to look for cervix and vagina, per vaginal done to look for uterine size, consistency, mobility and bilateral adnexa.

Laboratory investigation whenever indicated was done like CBC, BT/CT, Pap smear.

After that all patients underwent USG and hysteroscopy and a guided biopsy was taken in the same sitting and tissue was placed in 10% formalin for histopathological examination.

If endometrial thickness (double layer) measured less than 15 mm in premenopausal women and less than 4 mm in postmenopausal women and seemed regular by TVS, it was considered a normal finding. A centrally placed echodense line within the uterus and homogeneous endometrial lining with distinct margins to the myometrium were also considered normal. Deformations of the endometrial lining, absence of central hyperechoic line and the appearance of any structure with or without well-defined margins or variable echogenicity, were considered abnormal.

Post procedure

Patients general condition and vitals were checked. Any bleeding per vagina was watched for.

Statistical analysis

All the findings and observations were coded and entered in excel master sheet. Data was analysed using SPSS software version 24.

RESULTS

In present study, maximum women belonged to the age group 40-45 years.

We analyzed the presenting complaint of these patients and found that majority of women (38%) presented with heavy menstrual bleeding. The second commonest presenting complaint was polymenorrhoea (24%) as shown in Figure 1.

In Table 1, maximum patients who presented with AUB had normal findings whereas 46% have abnormal findings of which endometrial hyperplasia is maximum.

In Table 2, USG detected 2 patients with fibroid out of which 1 had normal finding and 1 had polyp on hysteroscopy and histopathology.

In Table 3, USG detected 7 patients with adenomyosis out of which 4 had normal finding and 1 had fibroid and 2 had atrophic endometrium on hysteroscopy and histopathology.

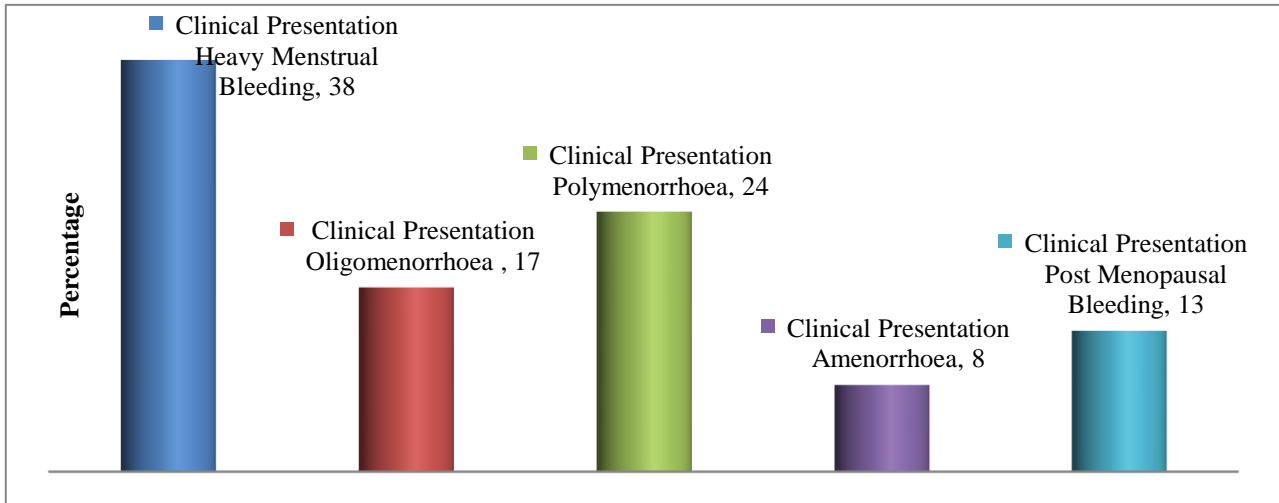


Figure 1: Distribution of women according to clinical presentation.

Table 1: Findings on USG, hysteroscopy and histopathology.

Findings	USG		Hysteroscopy		Histopathology	
	N	%	N	%	N	%
Normal	54	54	46	46	47	47
Abnormal	46	46	54	54	53	53
Submucous fibroid	2	4.35	7	12.96	0	0
Adenomyosis	6	13.04	0	0	0	0
Endometrial polyp	6	13.04	15	27.78	17	32
Endometrial hyperplasia	29	63.04	18	33.33	20	37.7
Endometritis	0	0	5	9.26	0	0
Endometrial malignancy	1	2.17	1	1.85	2	3.7
Intrauterine adhesions	0	0	5	9.26	0	0
Atrophic endometrium	2	4.35	3	5.56	10	18.8
Cervical polyp	0	0	0	0	4	7.5
Cervical malignancy	0	0	0	0	0	0

Table 2: Comparison of USG finding (fibroid) with hysteroscopy and histopathology.

Findings	USG	Hysteroscopy	%	HPE	%	
Fibroid	2	Normal	1	50	1	50
		Fibroid	0	0	0	0
		Adenomyosis	0	0	0	0
		Endometrial polyp	1	50	1	50
		Endometrial hyperplasia	0	0	0	0
		Endometrial malignancy	0	0	0	0

Continued.

Findings	USG	Hysteroscopy	%	HPE	%
		Intrauterine adhesions	0	0	0
		Cervical polyp	0	0	0
		Atrophic endometrium	0	0	0

Table 3: Comparison of USG finding (adenomyosis) with hysteroscopy and histopathology.

Findings	USG	Hysteroscopy	%	HPE	%	
Adenomyosis	7	Normal	4	66.6	4	66.6
		Fibroid	1	16.6	0	0
		Adenomyosis	0	0	0	0
		Endometrial polyp	0	0	1	16.6
		Endometrial hyperplasia	0	0	2	33.3
		Endometrial malignancy	0	0	0	0
		Intrauterine adhesions	0	0	0	0
		Cervical polyp	0	0	0	0
		Atrophic endometrium	2	33.3	0	0

Table 4: Comparison of USG finding (endometrial polyp) with hysteroscopy and histopathology.

Findings	USG	Hysteroscopy	%	HPE	%	
Endometrial polyp	6	Normal	1	16.6	1	16.6
		Fibroid	0	0	0	0
		Adenomyosis	0	0	0	0
		Endometrial polyp	5	83.3	5	83.3
		Endometrial hyperplasia	0	0	0	0
		Endometrial malignancy	0	0	0	0
		Intrauterine adhesions	0	0	0	0
		Cervical polyp	0	0	0	0
		Atrophic endometrium	0	0	0	0

Table 5: Comparison of USG finding (endometrial hyperplasia) with hysteroscopy and histopathology.

Findings	USG	Hysteroscopy	%	HPE	%	
Endometrial hyperplasia	29	Normal	6	20.6	7	24.3
		Fibroid	1	0	0	0
		Adenomyosis	0	0	0	0
		Endometrial polyp	1	0.3	1	0.3
		Endometrial hyperplasia	22	75.8	21	72.4
		Endometrial malignancy	0	0	0	0
		Intrauterine adhesions	0	0	0	0
		Cervical polyp	0	0	0	0
		Atrophic endometrium	0	0	0	0

Table 6: Comparison of USG finding (endometrial malignancy) with hysteroscopy and histopathology.

Findings	USG	Hysteroscopy	HPE
Endometrial malignancy	1	Normal	0
		Fibroid	0
		Adenomyosis	0
		Endometrial polyp	0
		Endometrial hyperplasia	0
		Endometrial malignancy	1
		Intrauterine adhesions	0
		Cervical polyp	0
		Atrophic endometrium	0

In Table 4, USG detected 6 patients with endometrial polyp out of which 1 had normal finding and 5 had polyp on hysteroscopy and histopathology.

In Table 5, USG detected 29 patients with endometrial hyperplasia out of which 6 had normal finding and 1 had polyp and 22 had endometrial hyperplasia on hysteroscopy and histopathology.

In Table 6, USG detected 1 patient with endometrial malignancy out of which 1 had endometrial malignancy on hysteroscopy and histopathology.

DISCUSSION

Anything that can significantly improve the accuracy of diagnosis, the cause of AUB in perimenopausal women can reduce the frequency of hysterectomy as a cure. AUB had become more important on 2nd half of twentieth century, because women were experiencing more menstrual cycles during their reproductive life.¹⁴ USG can be used to exclude organic pathology for AUB. It was well accepted that various disease pathology can be detected accurately by histopathological examination (HPE). The current study was carried out to evaluate various clinical presentations of perimenopausal AUB and to correlate ultrasonographic findings with histopathological examination in those patients undergoing hysterectomy.

In present study, maximum women belonged to the age group 40-45 years. The increased incidence of AUB in this age group was maybe because of initiation of menopause due to which the number of ovarian follicles decreased and there was increased resistance to the stimulation of gonadotropin hormone that resulted in declining the level of estrogen. This event did not help the endometrium to grow further. Talukdar et al described that most of the patients were between 40 and 45 years of age (67.97%).¹⁵ In a study by Patil most of the patients with AUB were between 37-41 years of age (56%).¹⁶ However, there was a little difference in the study conducted by Kaur et al range was 46-65 years with mean 50.80±4.06 years.¹⁷ This was found because of the reason that they had included only patients of postmenopausal bleeding and sample size of 70 which was a small amount as compared to the prevalence of AUB in India.

Out of 100 patients presenting with AUB included in our study, majority of patients 92 (92%) were multiparous and only eight patients (8%) were nulliparous. Similar to the study, Joshi et al and Gadge et al in their study too revealed that the highest incidence of AUB was seen in multiparous.^{18,19} This showed incidence of AUB increased as the parity increased.

In our study, USG detected that 54 patients (54%) had no pathology and 46 patients (46%) had abnormal findings, out of which maximum patients, 29 patients (63.04%) had endometrial hyperplasia and only case was found to have endometrial malignancy (2.17%). According to

Audimulapu et al USG detected that 52% had no pathology and 48% had abnormal findings, out of which maximum patients, 30% had endometrial hyperplasia.²⁰

In our study hysteroscopy was performed in all 100 women with AUB out of which 46 patients (46%) had normal hysteroscopic findings while 54 patients (54%) had abnormal findings of which maximum were 18 patients (33.33%) who had endometrial hyperplasia. According to Audimulapu et al hysteroscopy detected that 46% had no pathology and 54% had abnormal findings, out of which maximum patients, 18% had endometrial hyperplasia.²⁰ 16% had endometrial polyp. 6% of the patients were diagnosed to have submucous fibroid.

In the present study, histopathology revealed that forty seven patients (47%) had normal findings, twenty eight patients (28%) had proliferative and 19 patients (19%) had secretory changes. 53 patients (53%) had abnormal findings out of which maximum patients (37.7%) had endometrial hyperplasia. According to Audimulapu et al histopathology revealed that 30% had normal findings.²⁰ 70% had abnormal findings out of which maximum patients 20% had endometrial hyperplasia.

On ultrasonography, fifty four patients had normal finding out of which on hysteroscopy, maximum patients 48 (88.8%) had normal findings also on histopathology, maximum patients 44 (81.4%) had normal findings. Five patients (0.9%) had atrophic endometrium, three patients (0.5%) had endometrial hyperplasia and one patient (0.1%) had endometrial polyp.

In a study by Garg et al TVS compared to hysteroscopy had a higher specificity for diagnosis of endometrial hyperplasias.²¹ Hysteroscopy had been found to be more sensitive and specific in diagnosing endometrial polyps compared to TVS. TVS detected abnormal endometrial growth in one patient which was confirmed by histopathology. Hysteroscopy detected abnormal endometrial growth in one patient, which was confirmed by histopathology. This gave sensitivity of 100%, specificity of 100%, positive predictive value of 100% and negative predictive value of 100% in diagnosing endometrial cancer. This correlated with the study done by Souse et al, Haller et al and Taipale et al.²²⁻²⁴

Talukdar et al in their study described that twenty one cases were diagnosed as adenomyosis by histopathologically, ultrasound diagnosed 11 of them.¹⁵ According to Audimulapu et al in 2017 conducted a study on a comparative diagnostic evaluation of hysteroscopy, transvaginal ultrasonography and histopathological examination in cases of AUB.²⁰ Out of 50 cases, thirty eight cases (76%) of hysteroscopy findings correlated with histopathology and discrepancy in findings was noted in twelve cases (24%). In twenty six cases (52%), TVS findings correlated with histopathology findings and the results differed in twenty four patients (48%).

Vitner et al showed that ultrasound has 93% sensitivity, 58% specificity, 84.3% positive and 78.3%, negative predictive value while hysteroscopy had 92% sensitivity, 67% specificity, 87.3% positive and 77.7% negative predictive values.²⁵ Hysteroscopy had a significantly higher sensitivity in diagnosing intra-uterine fibroids while TVS had a significantly higher sensitivity in diagnosing retained products of conception. Although hysteroscopy had better predictive values for diagnosing uterine polyps the difference was not statistically significant. The combination of both TVS and hysteroscopy did not seem to improve the sensitivity and specificity.

Although transvaginal ultrasonography represented a practical approach for the initial evaluation of uterine pathologies, a hysteroscopy examination would be necessary in most of the suspicious cases. Hysteroscopy remained the best option for the assessment of AUB owing to its diagnostic performance when compared to transvaginal ultrasonography. It allowed direct visualization of the cavity and also sampling for HPE.

However more multicentric studies were required to formulate guidelines to recommend TVS/Hysteroscopy as diagnostic/screening modality alternative to conventional endometrial biopsy.

Limitation

USG had good sensitivity but less as compared to hysteroscopy. The disadvantage to USG was it failed to identify the accurate pathology.

CONCLUSION

In our study hysteroscopy proved to be highly sensitive and specific considering histopathology as gold standard. USG has good sensitivity and specificity but less as compared to hysteroscopy. The disadvantage to USG is it fails to identify the accurate pathology, therefore hysteroscopy should be considered as a better modality. So we concluded that ultrasonography should be used as routine first step diagnostic technique, but it may miss some small lesions like polyps, so hysteroscopy followed by histopathology should be considered as a standard modality to evaluation of AUB in perimenopausal and postmenopausal bleeding.

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