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Original Research Article

# Comparative evaluation of Transvaginal sonography and Diagnostic Hysteroscopy in abnormal uterine bleeding in perimenopausal age with their histopathological correlation

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**Abstract:** The objective is to achieve the greatest diagnostic accuracy with the least risk for patients by hysteroscopy, Transvaginal ultrasonography (TVS) and histopathological examination in cases of perimenopausal abnormal uterine bleeding. A prospective study was conducted over a period 1 year 2 months in Bankura Sammilani Medical College among 91 perimenopausal woman who were presented with abnormal uterine bleeding in outdoor. Six cases hysteroscopy cannot be done and were excluded from study. Eighty-five patients underwent TVS and hysteroscopy followed by endometrial biopsy. Most common bleeding pattern in patients with abnormal uterine bleeding were menorrhagia (30.59%) followed by metrorrhagia (22.35%). Sensitivity (S), Specificity (SP), positive predictive value (PPV), Negative predictive value (NPV) of TVS in comparison to gold standard H.P report, for diagnosis of hyperplastic endometrium and polyp was 43.75%, 95.65%, 70%, 88% and 50%, 89.16%, 10%, 98.67% respectively. Sensitivity (S), Specificity (SP), positive predictive value (PPV), Negative predictive value (NPV) of hysteroscopy for diagnosis of hyperplastic endometrium and polyp were –50%, 95.78%, 70%, 90.67%, and 71.43%, 100%, !00%, 94.67% respectively. TVS plays an important role as the initial modality to exclude any anatomical lesion in uterus, adnexal region and measurement of endometrial thickness for selecting patients who undergone for hysteroscopic evaluation. Hysteroscopy to be an ideal procedure for global evaluation of endometrial cavity and directed biopsy and for follow up of cases with abnormal uterine bleeding.

**Keywords:** Transvaginal Sonography (TVS), Hysteroscopy, abnormal uterine bleeding, endometrial biopsy, Dilatation and curettage (D&C)

## INTRODUCTION:

Regular cyclic menstruation indicates normal functioning hypothalamo pituitary ovarian axis and its target organs. Abnormal uterine bleeding is a common problem of adolescent girl & perimenopausal and postmenopausal women. In perimenopausal age most of the menstrual cycles are anovulatory, irregular and prolonged. Pregnancy is not so common in perimenopausal women, but can occur as infrequent ovulation is likely to continue in perimenopausal transitional period. So, the possibility of pregnancy related complications (threatened, incomplete or ectopic) should always be considered and excluded. An international expert consensus from the FIGO Menstrual Disorders working group has proposed a standardized classification system for AUB to facilitate greater appreciation of the complexities of this clinical entity [1]. In perimenopausal women as most of the menstrual cycles are anovulatory. After menopause, progesterone production ceases but peripheral conversion of adrenal and ovarian androgen to estrogen continues with cessation of ovarian function. Estradiol level may be as high as 100 Pg/ml. Endometrium is exposed to progesterone deprived, unopposed high level of estrogen. This may cause endometrial hyperplasia and carcinoma. Most of the endometrial hyperplasia

remain benign but when it is associated with cellular atypia, there is 8-29% chance of endometrial carcinoma. Endometrial CA can also develop without the endometrial hyperplasia, usually in the background of atrophic endometrium. In the past, when few diagnostic options were available, this condition was routinely managed with uterine curettage. However, the addition of Transvaginal sonography (TVS) and hysteroscopy has greatly improved the diagnostic accuracy. TVS provides more accurate information than per abdominal USG of pelvic organs. TVS can be the most cost effective initial test in women with abnormal uterine bleeding especially in perimenopausal age group [2]. TVS can accurately measure endometrial thickness and any organic lesion in uterine cavity. Endometrial biopsy must be done if endometrial thickness is >= 12 mm and to be consider if endometrial thickness is >= 5 to 12 mm to exclude any endometrial pathology. Diagnostic hysteroscopy is an outdoor office procedure with or without minimum anesthesia. It provides direct observation of endometrial cavity. Hysteroscopic examination is superior to other methods in evaluation of endometrial cavity [3]. Hysteroscopic diagnosis should not replace the histological diagnosis. Hysteroscopy is complementary to histological analysis as it permits pan evaluation of endometrial mucosa and biopsy is taken from abnormal areas. This comparative study of abnormal uterine bleeding by TVS, hysteroscopy and endometrial biopsy will help to establish early and accurate diagnosis of disease entity and its treatment.

## MATERIALS AND METHODS:

A prospective study was conducted over a period 1year 2 months (April 2014 to June 2015) in Bankura Sammilani Medical College, West Bengal. Ninety-one women at perimenopausal age were selected by simple random sampling technique who were presented with abnormal uterine bleeding in outdoor. Those having atrophic vaginitis, cervical cancer, cervical polyp, bleeding following trauma and active uterine bleeding were excluded from study. Six cases diagnostic hysteroscopy cannot be done due to atrophic cervix and difficulties and were excluded from study. A detailed clinical history of each patient was taken and general, systemic and gynaecological examinations were done. Laboratory investigations like -Complete hemogram, Sugar (PP), urea, creatinine, BT, CT, platelet count, TSH, $T_3$, $T_4$ (as and when required) were carried out. Thus, over a period 1 year 2 months, 85 patients with H/O abnormal uterine bleeding between 40-55yrs of age were considered for the study. The patients were divided in different age groups at an interval of three years. All 85 patients underwent TVS and hysteroscopy followed by endometrial biopsy. Specimen was preserved in formalin solution and sent for histopathological examination.

**Table 1: - Bleeding pattern of 85 patients under this study**

| Bleeding pattern | No. of cases | Percentage |
|---|---|---|
| Menorrhagia | 26 | 30.59 |
| Metrorrhagia | 19 | 22.35 |
| Continuous p/v bleeding following amenorrhea | 18 | 21.18 |
| Menometrorrhagia | 14 | 16.47 |
| Polymenorrhea | 8 | 9.41 |
| Total | 85 | 100 |

**Table 2: - TVS finding among 85 patients**

| TVS Findings | No. of cases | Percentage |
|---|---|---|
| A. Myometrium | | |
| -Normal | 58 | 68.23 |
| -Myohyperplasia | 6 | 7.06 |
| -Adenomyosis | 3 | 3.53 |
| -Fibroid | 18 | 21.18 |
| B. Endometrium thickness | | |
| <5 mm | 10 | 11.76 |
| 6-12mm | 54 | 63.54 |
| >13mm | 19 | 22.35 |
| Polyp | 2 | 2.35 |
| Proliferative | 53 | 62.35 |
| Secretory | 14 | 16.47 |
| Hyperplastic | 16 | 18.83 |
| C. Adnexal region | | |
| Normal | 80 | 94.12 |
| Ovarian cysts | 5 | 5.88 |

**Table 3 Hysteroscopy features among 85 patients**

| Hysteroscopy | No. of cases | Percentage |
|---|---|---|
| Proliferative endometrium | 45 | 52.94 |
| Secretory endometrium | 12 | 14.12 |
| Hyperplastic endometrium | 14 | 16.47 |
| Polyp | 14 | 16.47 |
| Total | 85 | 100 |

**Table 4: -Histopathology report (HP Report) among 85 patients**

| HP report | No. of cases | Percentage |
|---|---|---|
| Proliferative | 40 | 47.06 |
| Secretory | 20 | 23.53 |
| Hyperplastic | 10 | 11.76 |
| Polyp | 10 | 11.76 |
| Drug effect | 5 | 5.89 |
| Total | 85 | 100 |

**Table 5: - Agreement between 3 investigations**

| | Agreement between TVS and HP report | Agreement between hysteroscopy and HP report | Agreement between all three investigations |
|---|---|---|---|
| Proliferative | 33 | 33 | 27 |
| Secretory | 9 | 8 | 6 |
| Hyperplastic | 6 | 5 | 4 |
| Polyp | 1 | 10 | 1 |

**Table 6: - K (Kappa) statistic between TVS vs. HP report and Hysteroscopy vs. HP report**

| | K (Kappa) value |
|---|---|
| Between TVS and HP report | 0.34 |
| Between hysteroscopy and HP report | 0.51 |

**Table 7: - Sensitivity(S), Specificity (Sp), Positive predictive value (PPV) and Negative predictive value (NPV) of TVS in comparison to HP (Gold standard) report.**

| Findings | Sensitivity (S) | Specificity (Sp) | Positive predictive value (PPV) | Negative predictive value (NPV) |
|---|---|---|---|---|
| Proliferative | 62.26% | 78.13% | 82.5% | 55.56% |
| Secretory | 64.29% | 84.50% | 45% | 92.30% |
| Hyperplastic | 43.75% | 95.65% | 70% | 88% |
| Polyp | 50% | 89.16% | 10% | 98.67% |

**Table 8: - Sensitivity(S), specificity (Sp), positive predictive value (PPV) and negative predictive value (NPV) of hysteroscopy in comparison to Histopathology report (Gold standard).**

| Findings | Sensitivity (S) | Specificity (Sp) | Positive predictive value (PPV) | Negative predictive value (NPV) |
|---|---|---|---|---|
| Proliferative | 73.33% | 82.5% | 82.5% | 73.33% |
| Secretory | 83.33% | 86.30% | 50% | 96.92% |
| Hyperplastic | 50% | 95.78% | 70% | 90.367% |
| Polyp | 71.43% | 100% | 100% | 94.67% |

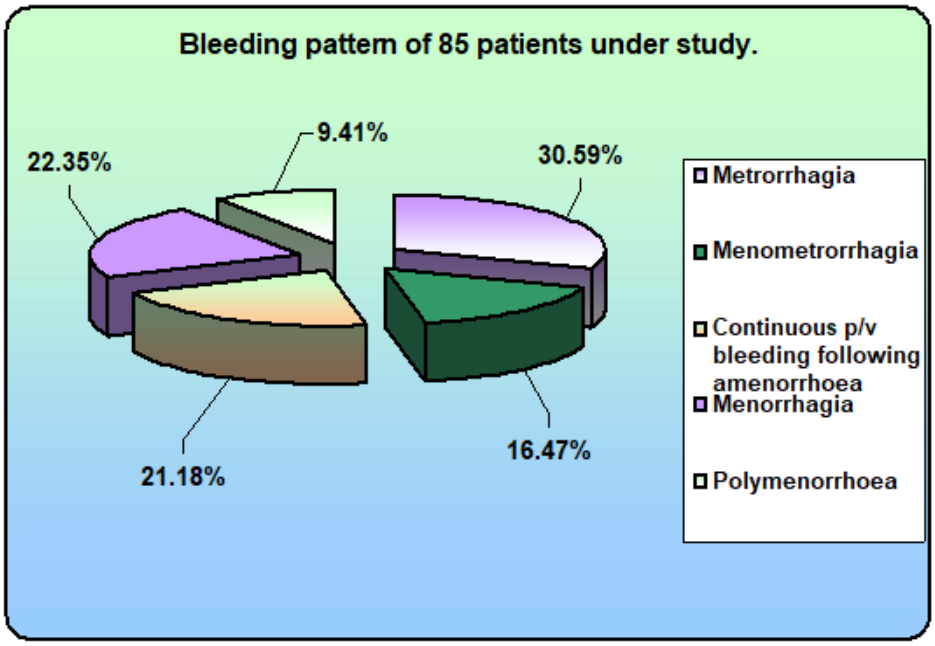


**Fig. 1: Bleeding pattern of 85 patients under study**

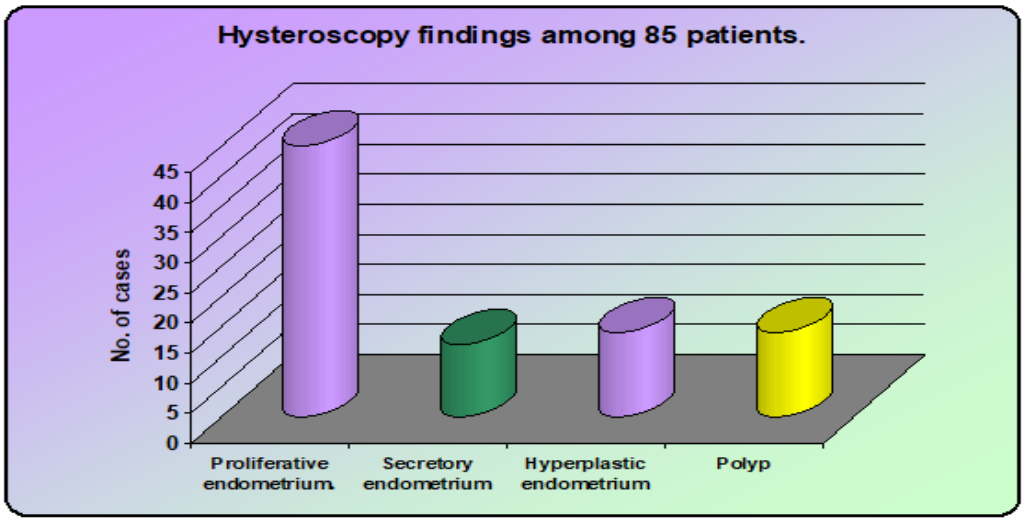


**Fig. 2: Hysteroscopy findings among 85 patients**

## RESULTS

The majority of patients (38.9%) belonged to the age group of 40-43 yrs. Most common bleeding pattern in patients with abnormal uterine bleeding were menorrhagia (30.59%) followed by metrorrhagia (22.35%). Sensitivity (S), Specificity (SP), positive predictive value (PPV), Negative predictive value (NPV) of TVS in comparison to gold standard H.P report, for diagnosis of hyperplastic endometrium and polyp was 43.75%, 95.65%, 70%, 88% and 50%, 89.16%, 10%, 98.67% respectively. Sensitivity (S), Specificity (SP), positive predictive value (PPV), Negative predictive value (NPV) of hysteroscopy for diagnosis of hyperplastic endometrium and polyp were –50%, 95.78%, 70%, 90.67%, and 71.43%, 100%, !00%, 94.67% respectively. K statistic between HP report and TVS report shows 'fair' agreement but K (Kappa) statistic between hysteroscopy and HP repot has 'good' agreement. (K – Value)

## DISCUSSION

In our study, most common bleeding pattern in patients with abnormal uterine bleeding were menorrhagia (30.59%) followed by metrorrhagia (22.35%). Channareddy Sunitha *et al.;* in 2013 studied that commonest presenting complaint in this series was menorrhagia 46%, followed by post-menopausal bleeding (32%) and Polymenorrhea (12%).[4]In our prospective study, Histopathology report showed most of the women had proliferative endometrium (47.06%) followed by secretory endometrium (32.53%), hyperplastic endometrium (11.76%) and 11.76% cases

had polyp. In Riffat Najeeb *et al.;* in 2010 study, histological reports showed that in 64 out of 141 cases there were normal proliferative endometrium. An endometrial pathology was found in 77 patients. Endometrial hyperplasia was diagnosed in 27, polyps in 33, and endometrial adenocarcinoma in 8 cases [5].

In this study, TVS findings showed 68.23% cases had normal uterine myometrium and 94.12% cases had normal adnexal region. Those who had myometrial lesions, fibroid was most common (21.18%), followed by myohyperplasia (7.06%) and adenomyosis (3.53%). TVS showed 18.83% cases had hyperplastic endometrium, 2.35% cases had polyp and rest had normal endometrium. Sensitivity (S), Specificity (SP), positive predictive value (PPV), Negative predictive value (NPV) of TVS in comparison to gold standard H.P report, for diagnosis of hyperplastic endometrium and polyp was 43.75%, 95.65%, 70%, 88% and 50%, 89.16%, 10%, 98.67% respectively. B YILDIZHAN *et al.;* in 2008 shows the sensitivity and specificity of TVS in detecting endometrial polyps were 65.2% and 87.9%, respectively and in detecting uterine fibroids were 95.8% and 95.0%, respectively as compared with sonohysterography [6].

263 cases were observed in Fatima Nazim *et al.;* in 2013 study in which 129 (49.0%) presented with menorrhagia, 120 (45.6%) presented as metrorrhagia while 14 (5.3%) had Polymenorrhea. The sensitivity and specificity of TVS was 100.0% and 63.7% respectively. Diagnostic accuracy of TVS in identifying endometrial hyperplasia using histopathology as gold standard was found to be 75.6% [7]. The present study depicted that according to hysteroscopy 16.47% cases had hyperplastic endometrium and polyp each and rest had proliferative and secretory endometrium. When hysteroscopy report were compared with HP report, it showed that HP report confirmed 73.33%, 66.67%, 35.71% and 71.42% cases with proliferative, secretory, hyperplastic endometrium and polyp respectively. Sensitivity (S), Specificity (SP), positive predictive value (PPV), Negative predictive value (NPV) of hysteroscopy for diagnosis of hyperplastic endometrium and polyp were –50%, 95.78%, 70%, 90.67%, and 71.43%, 100%, !00%, 94.67% respectively. In Karageyim karsidaq AY *et al.;* in 2010 study, TVS and hysteroscopy shows sensitivity, specificity, PPV, NPV were 63, 78, 89, 41%, respectively and 100, 44, 84, 100%, respectively [8]. According to Jaiswar shyam Pyari *et al.;* in 2006 study, most common symptoms in patients with abnormal uterine bleeding were menorrhagia (40%), metrorrhagia (18%), menometrorrhagia (14%), and Polymenorrhea (14%). Compared to hysteroscopy TVS has sensitivity of 78.15% and specificity of 44.4% [9]. In this study, agreement between three investigations (TVS, Hysteroscopy and Histopathology) was done and K value is calculated. K statistic between TVS and HP report showed 'fair' agreement (K value= 0.34). K (Kappa) statistic between hysteroscopy and HP report had 'good' agreement (K value = 0.51). In Mukhopadhayay S *et al.;* in 2007 study, they were considering histopathological report to be the gold standard, for diagnosis of hyperplastic endometrium, Transvaginal sonography and hysteroscopy showed fair agreement (k=0.34) and good agreement (k=0.51) and Hysteroscopic diagnosis of polyp showed strong agreement (k=0.81) [10].

## CONCLUSION

Abnormal uterine bleeding is a common gynecological problem. Proper history, physical and pelvic examinations with appropriate diagnostic tests are essential for early diagnosis and proper treatment of the patients. TVS is most important to exclude any anatomical lesion in uterus and adnexal region. It is also important for measurement of endometrial thickness and selecting patients for additional testing. Hysteroscopy is most important for proper evaluation of endometrial cavity, particularly for diagnosis of polyp which is likely to be missed by TVS. Hysteroscopy is most specific and sensitive for diagnosis of polyp but less specific for diagnosis of endometrial hyperplasia, probably due to lack of specific diagnostic criteria. Hysteroscopy does not replace histopathology report but is complementary to histopathological analysis since it permits a global evaluation of endometrial mucosa. The high diagnostic accuracy with minimal trauma, render hysteroscopy to be an ideal procedure for global evaluation of endometrial cavity and directed biopsy and for follow up of cases with abnormal uterine bleeding [11].

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