



## Original Research Article

## To compare the diagnostic accuracy of hysteroscopy with transvaginal sonography in detection of endometrial polyp and endometrial hyperplasia in peri and postmenopausal women with abnormal uterine bleeding

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## ABSTRACT

**Background:** Abnormal uterine bleeding is the most common health problem encountered by women. AUB is a common gynaecological complaint and it may involve females at any age group. 33% of women referred to gynaecology clinics have AUB and the figure rises to 69% in premenopausal and postmenopausal women. Abnormal uterine bleeding accounts for two thirds of all hysterectomies.

**Materials and Methods:** The present study was prospective cross sectional study conducted in the Department of Obstetrics and Gynaecology, Kamla Nehru State Hospital for Mother & Child Indira Gandhi Medical College Shimla for period of one year w.e.f 1st May 2018 to 30th April 2019. The study was started after hospital ethical committee approval. 76 patients peri and post menopausal women were enrolled in the study after taking written consent). A detailed history, general and systemic examination was done. All patients underwent transvaginal sonography followed by hysteroscopy and further management was done according to the abnormality detected.

**Results:** Hyperplasia on TVS was present in 15 study subjects i.e 19.7% (14 perimenopausal one postmenopausal). 13 subjects i.e 17.1% on hysteroscopy showed hyperplasia further on histopathology hyperplasia was confirmed in 15 subjects i.e 19.7% (14 had simple hyperplasia one had complex hyperplasia with atypia). On TVS endometrial polyp was seen in 22 subjects i.e 28.9% (18 perimenopausal four post menopausal) Hysteroscopy showed that 27 subjects i.e 35.5% had endometrial polyp (23 peri menopausal four postmenopausal). Further on histopathology endometrial polyp was confirmed to be present in 26 subjects i.e 34.2%. Sensitivity Specificity PPV NPV of Transvaginal sonography versus hysteroscopy for endometrial polyp was 81.5% 100% 100%, 88.6% respectively. For endometrial hyperplasia Sensitivity Specificity PPV NPV was 100% 96.3% 86.9% 100% respectively.

**Conclusion:** Abnormal uterine bleeding is a problem which women in perimenopausal and postmenopausal period frequently encounter. Of all investigations, TVS is quick, simple, painless, least invasive, less expensive and readily available procedure. Hysteroscopy not only allows direct visual observation of pathology but also provides a means to sample the site, most likely to yield positive results. Hence, it should be made an essential part of diagnostic workup of abnormal uterine bleeding.

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## 1. Introduction

Abnormal uterine bleeding is the most common health problem encountered by women.<sup>1</sup> It is defined as bleeding from uterus that differs from that of usual normal menstrual bleeding, in frequency of occurrence or in amount or in

alteration of flow.<sup>1</sup> AUB is a common gynaecological complaint and it may involve females at any age group.<sup>2</sup> 33% of women referred to gynaecology clinics have AUB and the figure rises to 69% in premenopausal and postmenopausal women.<sup>2</sup> Abnormal uterine bleeding accounts for two-thirds of all hysterectomies.<sup>3</sup> Prior to menopause comes the perimenopausal transitional period

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that encompasses the change from normal ovulatory cycles to cessation of menses and is marked by irregularity of menstrual cycles.<sup>4</sup> Menopause is defined as time of cessation of ovarian function resulting in permanent amenorrhoea for 1 year.<sup>5</sup> However, vaginal bleeding occurring anytime after 6 months in menopausal age should be considered as postmenopausal bleeding and should be investigated.<sup>3</sup> It normally occurs between ages of 45 -50 years, the average age being 47 years.<sup>5</sup>

Prevalence of AUB is around 17.9% in India.<sup>6</sup> AUB in perimenopausal women demonstrated prevalence of normal endometrium (78.4%), endometrial hyperplasia (11.8%), polyp (4.2%) and adenocarcinoma (5.5%).<sup>7</sup> Perimenopausal age group women may present with heavy menstrual bleeding, intermenstrual bleeding or contact bleeding whereas postmenopausal women may complain of spotting and heavy menstrual flow.<sup>8</sup> Atrophic endometritis, endometrial hyperplasia, endometrial polyps, endometrial myomas & endometrial cancers are leading causes of postmenopausal bleeding.<sup>9</sup> About 80% of endometrial cancers in post-menopausal women occur in 50-65 years.<sup>7</sup> On the other hand 10-15% of women with post-menopausal bleeding have endometrial cancers.<sup>9</sup>

Women report to gynaecologists whenever there is departure from their personal menstrual experiences.<sup>10</sup> Variations from normal cyclical pattern in perimenopausal age group may be due to physiological hormonal changes on one hand or may be due to neoplastic changes either benign or malignant, on the other hand.<sup>10</sup> Accurate diagnosis of causative factor of abnormal uterine bleeding in both the groups is of utmost importance, so that appropriate management can be established.<sup>10</sup>

Tests have evolved over the years starting from blind dilatation and curettage to latest immunohistochemical markers.<sup>11</sup> Relative accuracy of these tests varies and gynaecologists all over the world up till now have not reached a consensus on what test to advise first.<sup>10</sup>

TVS examination of uterus in AUB woman is quick, simple, painless, less expensive and accurate procedure.<sup>11</sup> Endometrial thickness shown by TVS can be interpreted as Secretory, Proliferative Endometrium or Abnormal Endometrium depending on the thickness measurement and co-relating it clinically with the phase of Menstruation.<sup>12</sup>

Ability of TVS for screening the lesions within the endometrial cavity is limited. The finding of a thickened central endometrial complex seen on TVS is often non-specific and may be caused by an endometrial polyp, submucosal fibroids, endometrial hyperplasia, carcinoma, or cystic atrophy. Focal lesions are underdiagnosed at TVS because of limitations of the double-layer thickness evaluation.<sup>13</sup>

In hysteroscopy an endoscope, usually 3-5 mm is inserted into the endometrial cavity, uterine cavity is then visualized.<sup>8</sup> The advantages of hysteroscopy as an accurate

diagnostic technique are that it not only allows direct visual observation of pathology but also provides a means to sample the site, most likely to yield positive results.<sup>14</sup> Also hysteroscopy can detect intracavitary lesions such as leiomyomas and polyps that might be missed on TVS or endometrial sampling.<sup>8</sup> Commonly performed procedures utilizing hysteroscopy include diagnostic hysteroscopy, tubal sterilization, polypectomy myomectomy, and excision of uterine septa. Submucous myomas no longer require hysterectomy because they can be satisfactorily managed conservatively by operative hysteroscopy.<sup>15</sup> Hysteroscopic examination is superior to other methods in evaluation of endometrial cavity. It should not replace the histological diagnosis. Hysteroscopy is complementary to histological analysis it permits pan evaluation of endometrial mucosa and biopsy is taken from abnormal areas in the same setting.<sup>16</sup>

## 2. Materials and Methods

The present study was prospective cross-sectional study conducted in the Department of Obstetrics and Gynaecology, Kamla Nehru State Hospital for Mother & Child Indira Gandhi Medical College Shimla for period of one year w.e.f 1st May 2018 to 30th April 2019. The study was started after hospital ethical committee approval.<sup>76</sup> patients ( $\geq 40$  years and post menopausal women were enrolled in the study (after taking written consent). A detailed history, general and systemic examination was done. The study population was subjected to a thorough physical examination and routine investigations followed by transvaginal sonography and then by hysteroscopy after obtaining post-counselling informed consent. The procedure was performed in a minor operation theatre under sedation. Patient was taken to the procedure room and placed in the dorsal lithotomy position. After a bimanual examination, cervix was cleaned with using of 10% povidone-iodine or A single-toothed tenaculum was then applied to the anterior lip of the cervix. A small amount of local anaesthetic was used prior to applying the tenaculum.

Normal saline was used as the distension media. Once equipment for distention media was activated and functional, the flow of the medium was started. As the hysteroscope was introduced to the external cervical os and advanced into the endocervical canal, attention was turned to the video monitor or eyepiece. The distal tip of the hysteroscope was then gently advanced through the length of the cervix, taking care to keep the endocervical canal central on the viewing field when using a 0 degree scope. The first evaluation was done in panoramic view of the intrauterine cavity. Next, careful inspection of the following areas was done: lateral uterine walls, superior uterine cavity, and anterior and posterior uterine walls. Gentle movement of the hysteroscope was done during the

procedure. Excessive trauma to the endometrial surface was avoided as it may cause bleeding which might obscure the view and has risk of perforation. Any pathology was inspected and documented.

Guided biopsy was taken and subjected to histopathological evaluation. Chi square test was applied to test the strength of association and p value less than 0.05 was considered significant. For quantitative data, mean and standard deviation was calculated and comparison will be done using student T test.

### 2.1. Inclusion criteria

Perimenopausal women age >40years with menorrhagia, menometrorrhagia, polymenorrhea, intermenstrual bleeding, post coital bleeding, Post menopausal bleeding.

### 2.2. Exclusion criteria

Pregnancy, Woman taking hormonal replacement therapy, obvious cause of bleeding from cervix and vagina, woman with bleeding diathesis, woman on anticoagulant therapy, transvaginalsonography showing adenexal pathology.

## 3. Result

A total of 76 symptomatic perimenopausal and post menopausal women were included in the study at Department of Obstetrics and Gynaecology, Kamla Nehru State Hospital for Mother & Child, Indira Gandhi Medical College Shimla over a period of one year.

### 3.1. TVS findings

#### 3.1.1. Transvaginal sonography (TVS) findings

All the study subjects underwent TVS examination. Our study observed that endometrial polyp was detected in 22 subjects (28.9%) (four in postmenopausal, 18 in perimenopausal AUB), hyperplasia was found in 15 subjects i.e 19.7%. (14 perimenopausal one post menopausal)

**Table 1:**

TVS Findings	N	Percentage
Polyp	22	28.9%
ET Size (mm) >12	15	19.7%

Data expressed as frequency and percentage.

\*On TVS many subjects had more than one finding.

### 3.2. Hysteroscopy findings

In the present study, on hysteroscopy endometrial hyperplasia was seen in 13 subjects (17.1%), endometrial polyp was present in 27 subjects (35.5%).

**Table 2:**

Hysteroscopy Findings	n	Percentage
Hyperplasia	13	17.1%
Endometrial Polyp	27	35.5%

Hysteroscopy findings (n=76)

### 3.3. On histopathology

In our study hyperplasia was present in 15 subjects (simple hyperplasia was present in 14 subjects, 1(1.3%) had complex hyperplasia with atypia), endometrial polyp was detected in 26 (34.2%).

**Table 3:** Histopathology examination

Histopathology Findings	N	Percentage
Hyperplasia	14	18.4%
Endometrial Polyp	26	34.2%

### Correlation of TVS hysteroscopy and histopathology

**Table 4:** Endometrial hyperplasia

	TVS	Hysteroscopy	HPE
Peri	14	12	14
Post	1	1	1
Total	19.7%	17.1%	19.7%

Hyperplasia on TVS was present in 15 study subjects i.e 19.7% (14 perimenopausal one postmenopausal). 13 subjects i.e 17.1% on hysteroscopy showed hyperplasia further on histopathology hyperplasia was confirmed in 15 subjects i.e 19.7% (14 had simple hyperplasia one had complex hyperplasia with atypia).

2 cases of hyperplasia were misdiagnosed on hysteroscopy 1 as polyp and other as normal endometrium.



**Fig. 1:**

**Table 5:** Endometrial polyp

	TVS	Hysteroscopy	HPE
Peri	18	23	22
Post	4	4	4
Total	28.9%	35.5%	34.2%

On TVS endometrial polyp was seen in 22 subjects i.e 28.9% (18 perimenopausal four post menopausal) Hysteroscopy showed that 27 subjects i.e 35.5% had endometrial polyp (23 peri menopausal four postmenopausal). Further on histopathology endometrial polyp was confirmed to be present in 26 subjects i.e 34.2%.

TVS missed 4 cases of endometrial polyp as:

2 Subjects were misdiagnosed as hyperplasia, 1 as fibroid, 1 as normal.

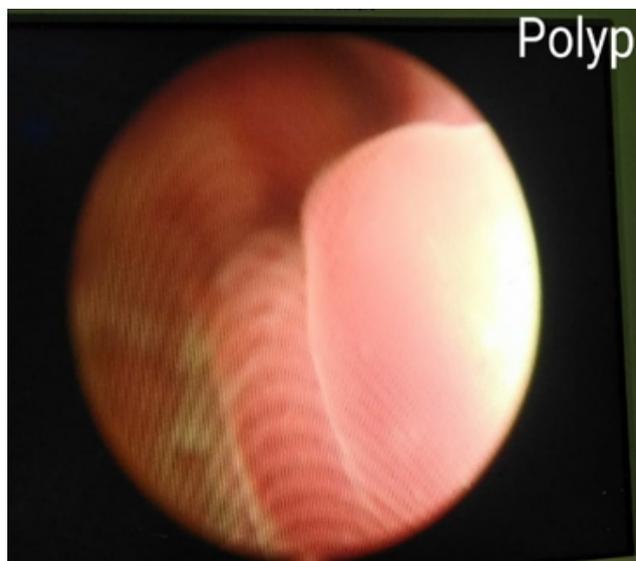
On hysteroscopy 1 case of polyp was falsely diagnosed as hyperplasia.

**Table 6:** TVS versus hysteroscopy (Endometrial polyp)

Sensitivity	Specificity	PPV	NPV
81.5%	100%	100%	88.6%

**Table 7:** TVS versus hysteroscopy (Endometrial hyperplasia)

Sensitivity	Specificity	PPV	NPV
100%	96.3%	86.6%	100%

**Fig. 2:**

#### 4. Discussion

Abnormal uterine bleeding is defined as bleeding from uterus that differs from that of usual normal menstrual

bleeding, in frequency of occurrence or in amount or in alteration of flow. AUB is a common gynaecological complaint and it may involve females at any age. In the past, when few diagnostic options were available, this condition was routinely managed with uterine curettage. D & C being a blind procedure can miss the specific lesions. However, with the addition of Transvaginal sonography, saline infusion sonography and hysteroscopy diagnostic accuracy has improved significantly. Office hysteroscopy has been shown to be a simple, safe, well tolerated and reliable procedure in the diagnosis of AUB across all age groups and its wide spread use can drastically reduce the need for conventional curettage.

**Table 8:** TVS vs HPE (Endometrial hyperplasia)

Study	Year	Sensitivity	Specificity
Barman et al	2014	43.7%	95.6%
Choudhary et al	2015	81%	92%
Present study	2018	100%	100%

In the present study the sensitivity and specificity of TVS for hyperplasia was 100% which is comparable to findings of Chaudhary et al. i.e sensitivity of 81% & specificity of 92%. Barman et al. observed the sensitivity of TVS was 43.7% which was very less as compared to present study but their specificity was 95.6%. k (kappa) statistics between TVS and histopathology showed fair agreement but k statistics between hysteroscopy and histopathology report had good agreement. Moreover majority (78.9%) perimenopausal women in the present study had AUB with anovulatory cycles resulting in hyperestrogenic state leading to heavy menstrual bleeding.

**Table 9:** TVS vs HPE (Endometrial polyp)

Study	Year	Sensitivity	Specificity
Tandulwadkar et al	2009	71.4%	96.3%
Vitner et al	2013	44.8%	81.8%
Present study	2018	84.6%	100%

In the present study specificity of TVS for detection of endometrial polyp was 100% while specificity observed by Tandulwadkar et al. and Vitner et al. was 96.3% and 81.8% respectively which is comparable to the present study. On the other hand sensitivity observed by Tandulwadkar et al. and Vitner et al. was 71.8% and 44.8% respectively which is markedly low as compared to the present study i.e 84.6%.

**Table 10:** Hysteroscopy vs HPE (Endometrial hyperplasia)

Study	Year	Sensitivity	Specificity
Shukla et al	2012	100%	98.04%
Barman et al	2014	50%	95.7%
Present study	2018	100%	96%

In our study sensitivity and specificity of hysteroscopy turned out to be 100% and 96% respectively as compared to TVS i.e 100% and 100% respectively. In a study by Nazim F (2013) diagnostic accuracy of TVS in identifying endometrial hyperplasia using histopathology as gold standard was 75.6%. Barman et al. observed that on hysteroscopy 16.47% had hyperplastic endometrium and histopathology report confirmed hyperplastic endometrium in 35.71%. Thus in experienced hands TVS has slightly better diagnostic accuracy in diagnosing endometrial hyperplasia as compared to hysteroscopy probably due to lack of specific diagnostic criteria.

**Table 11:** Hysteroscopy vs HPE (Endometrial polyp)

Study	Year	Sensitivity	Specificity
Vitner et al	2013	65.5%	89.6%
Barman et al	2017	71.4%	100%
Present study	2018	100%	97.5%

In present study specificity of Hysteroscopy for endometrial polyp was 97.5%. Vitner et al and Barman et al. documented specificity 89.6% and 100% respectively which correlates well with the present study. In our study sensitivity of Hysteroscopy for endometrial polyp is relatively high i.e 100% as compared to sensitivity 65.5% observed by Vitner et al. and 71.4% by Barman et al. In a systematic review by Forquhar C et al. there was a narrower range of sensitivity (90-97%) but relatively wide range of specificity (62-93%) for hysteroscopy to detect endometrial lesions in AUB. In our study hysteroscopy has slightly better diagnostic accuracy than TVS in detecting endometrial polyps which is consistent with the existing literature.

## 5. Conclusion

Abnormal uterine bleeding is a problem which women in perimenopausal and postmenopausal period frequently encounter. It has a negative impact on the quality of life and many women end up undergoing hysterectomies. Management of AUB requires a correct diagnosis. Many modalities which help in the correct diagnosis are available.

TVS is an important modality for evaluating the patient of AUB. It is quick, simple, painless, least invasive, less expensive and readily available procedure and does not need full bladder like TAS. TVS can be the most cost effective initial test in women with abnormal uterine bleeding especially in perimenopausal age group but its ability for screening the lesions in the endometrial cavity is limited. In addition hysteroscopy has a better diagnostic accuracy as it provides the option of see and treat which is recommended for peri and post menopausal women with AUB. Though hysteroscopy showed better correlation with endometrial histopathology but endometrial hyperplasia was better diagnosed with TVS in the present study. The intracavitary lesions i.e endometrial polyps is better diagnosed on hysteroscopy. Also, it not only allows direct

visual observation of pathology but also provides a means to sample the site, most likely to yield positive results. Hence it should be made an essential part of diagnostic workup of abnormal uterine bleeding.

## 6. Source of Funding

None.

## 7. Conflict of Interest

The author(s) declare(s) that there is no conflict of interest.

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