

A COMPARATIVE STUDY OF HYSTEROSCOPY AND TRANSVAGINAL SONOGRAPHY IN DIAGNOSIS OF ENDOMETRIAL PATHOLOGY IN ABNORMAL UTERINE BLEEDING AT TERTIARY CARE CENTRE

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ABSTRACT

Background: Abnormal uterine bleeding is the most common complaint in gynaecology and an important source of morbidity. This study compares accuracy of hysteroscopy and transvaginal sonography in diagnosis of endometrial pathology in abnormal uterine bleeding. **Materials & Methods:** Fifty Women attending gynaecological outdoor in hospital attached to Government Medical College, Pali, Rajasthan with abnormal uterine bleeding fitting into the inclusion criteria during one-year period, were admitted and evaluated with TVS and hysteroscopy. Data was collected and analysed. **Results:** Among 50 patients of AUB in this study, majority of the patients were in perimenopausal age group. Seventy percent of cases were multiparous, i.e., para 2 and 3. Menorrhagia was the most common bleeding pattern seen in 44% of cases. Fifty-two percent of patients had symptoms for less than 6 months before seeking a medical opinion. Sixty percent of patients had previous irregular menstrual cycles. Hysteroscopy was taken as gold standard and TVS findings were compared the sensitivity of TVS in detecting polyps, submucous fibroid were 10%, 6% respectively and for the normal variants like proliferative and secretory it was 28% & 16% respectively. TVS showed good correlation with hysteroscope findings for normal variants of endometrium, but poor correlation for intracavitary pathologies. **Conclusion:** We conclude that transvaginal sonography, though useful as a first-line screening tool, has limited sensitivity in detecting focal and subtle endometrial pathologies. Hysteroscopy, with its high diagnostic accuracy and ability to allow direct visualization and targeted biopsy, proves to be a superior modality for evaluating endometrial abnormalities in perimenopausal women with AUB.

INTRODUCTION

Abnormal uterine bleeding (AUB) is one of the most common gynaecological complaints encountered in perimenopausal women and accounts for a significant proportion of outpatient visits and hospital admissions. World Health Organization (WHO) defines perimenopause as 2 to 8 years of the time period preceding menopause and the 1-year post final menses. About 20 to 25% of gynaecological outpatient department (OPD) visits are related to AUB.^[1]

This condition not only affects the quality of life but may also be a presenting symptom of underlying endometrial pathology, including hyperplasia and

malignancy, necessitating timely and accurate evaluation.^[2,3] In India, the reported prevalence is 17.9%.^[4] This proportion rises to 50% when perimenopausal and postmenopausal age groups are considered. It not only affects the quality of life such as intimate relationships, day-to-day living but can have serious adverse consequences such as anaemia, underlying malignancy or increased financial burdens.^[5]

Goals of clinical management are primarily dependent upon attaining a correct etiological diagnosis. The history, physical and pelvic examination attempt to determine the site of the bleeding and its source. Information gathered from this will suggest what direction the investigation

would take. Traditionally Dilatation and Curettage and Ultrasonography were the most common investigations employed in the evaluation of the causes of abnormal uterine bleeding.^[6]

Dilatation and Curettage is a blind procedure, and the endometrium has to be sent to the Pathologist to study histological patterns and for the report. The cooperation of the Pathologist is important. Ultrasonography clearly depicts the uterine contour and the status of the ovary but fails to provide adequate information regarding the endometrium.

Hysteroscopy has ushered a new era in the evaluation of abnormal uterine bleeding. By direct visualization of the uterine cavity it is able to pinpoint the aetiology in the majority of the cases. It can accurately detect endometrial hyperplasia and aids in the early diagnosis of endometrial carcinoma and uterine polyps.

Transvaginal ultrasonography (TVS) has emerged as a first-line, non-invasive imaging modality for the assessment of endometrial thickness and morphology. It is widely available, cost effective, and well-tolerated by patients. TVS helps in identifying endometrial abnormalities such as hyperplasia, polyps, and malignancy by measuring endometrial thickness and evaluating structural characteristics.^[7,8] However, its diagnostic accuracy may be limited in distinguishing focal lesions and subtle intrauterine abnormalities.

The judicious use of hysteroscopy to manage this medical entity adds a new dimension in handling this often-perplexing problem. This study has been taken up to analyse the place of hysteroscopy in the evaluation of Abnormal Uterine Bleeding in terms of accuracy of hysteroscopic findings and the contribution of the procedure to clinical diagnosis. It also aims to correlate hysteroscopic findings with histopathological results.

MATERIALS AND METHODS

The present study was designed as a prospective comparative study conducted in the Department of Obstetrics and Gynecology at a tertiary care hospital. The study was carried out over a period of one year, and it included perimenopausal women presenting with complaints of abnormal uterine bleeding (AUB). All women who fulfil the inclusion criteria will be included in the study and explained about the procedure and results will be subjected to statistical analysis.

Exclusion Criteria

- Pregnancy complications
- Pelvic inflammatory disease
- Women with coagulation disorders.

Methods

After informed written consent and counselling, detailed clinical history was taken and general, systemic pelvic and rectal examinations were done. Investigations like complete hemogram, bleeding time, clotting time, platelet counts, thyroid function

tests, liver function tests and routine urine examination carried out.

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. Investigations like complete hemogram, bleeding time, clotting time, thyroid function tests, blood sugar, liver and kidney function tests and pregnancy test were carried out. Transvaginal sonography was done by 7.5 MHz transducer and uterine size and contour, intramural and submucosal lesion and endometrial thickness were studied. Then diagnostic hysteroscopy was carried out for all patients under general anaesthesia using 6 mm diagnostic sheath and 4 mm telescope. A systematic evaluation of the cavity was done observing the uterine cavity, fundus, tubal ostia, anterior and posterior uterine wall and cervical canal and biopsy taken for histopathological study which was considered as gold standard. After tabulating the findings of TVS and hysteroscopy it was compared with histopathology and the sensitivity, specificity, PPV and NPV of TVS was calculated and compared to hysteroscopy.

Postoperative care:

Patient has been observed for any complications due to the procedure and encouraged to void urine. Input and output chart maintained. Patient has been given broad spectrum antibiotic and discharged on the next day.

Statistical Analysis:

Statistical analysis was done with the help of SPSS software. Sensitivity, specificity, and positive and negative predictive values of transvaginal ultrasonography and hysteroscopy in detecting abnormal uterine bleeding.

RESULTS

A total of 50 women giving consent for this study are enrolled during one-year period. Most common age group was 35 to 40 years, mean age being 38.79 ± 2.36 years. Seventy percent of cases were multiparous, i.e., para 2 and 3. Menorrhagia was the most common bleeding pattern seen in 44% of cases. Fifty-two percent of patients had symptoms for less than 6 months before seeking a medical opinion. Sixty percent of patients had previous irregular menstrual cycles (Table 1).

On transvaginal sonography, suggestive of hyperplasia (endometrial thickness >12 mm) seen in 15 cases (30.0%). Endometrial polyp was identified in 5 cases (10%), while submucous myoma was noted in 3 cases (6%) (Table 2).

Hysteroscopic evaluation showed that normal endometrium was present in 22 cases (44.0%), including proliferative endometrium in 14 cases (28.0%) and secretory endometrium in 8 cases (16.0%). Among abnormal findings, hyperplastic endometrium was the most common, observed in 12

cases (24.0%), followed by endometrial polyp in 10 cases (20.0%), submucous myoma in 4 cases (8%), endometritis in 1 case (2%), and carcinoma endometrium in 1 case (2%) (Table 3).

The diagnostic performance of transvaginal sonography showed moderate accuracy for detecting endometrial abnormalities. For normal endometrium, the sensitivity was 56% and specificity was 52%, with an overall accuracy of 54%. For endometrial polyp, sensitivity was relatively low at 13%, though specificity was higher at 70%. Thickened endometrium showed high specificity (94.00%) and positive predictive value (96%), but lower sensitivity (38%). Submucous myoma detection also demonstrated low sensitivity (12%) but high specificity (92%) (Table 4).

Hysteroscopy demonstrated significantly higher diagnostic accuracy compared to transvaginal sonography. For proliferative endometrium, the sensitivity was 70% and specificity was 96%, with an accuracy of 88%. Secretory endometrium showed high sensitivity (92%) and specificity (96%), with an overall accuracy of 96%. Endometrial polyp detection had an accuracy of 92%, while submucous myoma, endometritis and carcinoma endometrium both showed 100.00% sensitivity, specificity, and accuracy. Hyperplastic endometrium showed high sensitivity (90%) and specificity (87%), confirming the superior diagnostic utility of hysteroscopy (Table 5).

Table 1: Demographic distribution of women

Parameters	Most common findings (N=50)	Percentage
Age group	35-40 years (38.79±2.36 yrs)	44%
Parity	Multiparous women	70%
Bleeding pattern	Menorrhagia	44%
Duration of Symptoms	<6 months	52%
Previous cycles	Irregular	60%

Table 2: Distribution of cases according to transvaginal sonography findings

TVS Findings	Number of Cases	Percentage (%)
Normal endometrium (ET 12 mm)	27	54%
Thickened endometrium (>12 mm)	15	30.0%
Endometrial polyp	5	10%
Submucous myoma	3	6%
Total	50	100%

Table 3: Distribution of cases according to hysteroscopy findings

Hysteroscopy findings	Number of Cases	Percentage (%)
Proliferative endometrium	14	28%
Secretory endometrium	8	16%
Endometrial polyp	10	20%
Submucous myoma	4	8%
Hyperplastic endometrium	12	24%
Endometritis	1	2%
Carcinoma endometrium	1	2%

Table 4: Diagnostic characteristics of TVS

Parameters	Accuracy (%)	Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)
Normal endometrium (ET 12 mm)	54%	56%	52%	80%	22%
Thickened endometrium (>12 mm)	50%	38%	94%	96%	26%
Endometrial polyp	22%	13%	70%	56%	18%
Submucous myoma	25%	12%	92%	78%	20%

Table 5: Diagnostic characteristics of Hysteroscopy

Parameters	Accuracy (%)	Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)
Proliferative endometrium	88%	70%	96%	88%	88%
Secretory endometrium	96%	92%	96%	84%	99%
Endometrial polyp	92%	74%	86%	94%	54%
Submucous myoma	100%	100%	100%	100%	100%
Hyperplastic endometrium	88%	90%	87%	70%	96%
Endometritis	100%	100%	100%	100%	100%
Carcinoma endometrium	100%	100%	100%	100%	100%

DISCUSSION

Abnormal uterine bleeding in the perimenopausal period represents a significant clinical challenge due to the wide spectrum of underlying endometrial

pathologies ranging from physiological changes to premalignant and malignant conditions.

Most common age group having AUB in this study were in between 35-40 years (44%), followed by 40-45 years (26%) and 45-50 years (20%) which means majority of the patients belonged to perimenopausal

age group. Similarly, Mishra S et al had maximum number of AUB patients in age group 36-40 years (39.2%) followed by 27.5% women in 41-45 years age group.^[9] As per Kumari M et al and Patil R et al 37% and 45% patients respectively were in 31-40 years age group.^[10,11] Sheth SS, Towbin NA et al and Veena BT et al also had similar clinical presentation in their studies.^[12-14]

In our study, the highest incidence of AUB was seen in multiparous, i.e., para 2 and 3 (70%). It is in concordance with the result of the study done by Joshi et al.^[15] in which they found 61.5 % of multiparous patients and 21.2% nulliparous patients in a study of a histopathological audit of the endometrium. Khan et al.^[16] did a study on 500 patients with abnormal uterine bleeding and found that 54% were multiparous and 5.4% were nulliparous which is similar to our study. In our study, the commonest bleeding pattern seen in patients is menorrhagia (44%) followed by menometrorrhagia (24%). With regards to the pattern of bleeding, Bhosle et al.^[17] stated that maximum incidence was of menorrhagia (53.3%), followed by 28.2% and 12.2% with polymenorrhea and intermenstrual bleeding respectively. The study conducted by Rifat et al.^[18] reported 47.2% of cases with menorrhagia, which is similar to our study.

Transvaginal sonography, as a non-invasive diagnostic modality, demonstrated that 54% of cases had normal endometrium, while 30.0% showed thickened endometrium suggestive of hyperplasia. Although TVS is widely accepted as a first-line investigation, its diagnostic performance in this study was moderate, with sensitivity of 38.00% and specificity of 94.00% for detecting thickened endometrium. The high specificity indicates that TVS is useful in ruling in pathology when positive, but its low sensitivity limits its ability to detect all abnormal cases. These findings are consistent with studies that have highlighted the limitations of TVS in identifying focal lesions such as polyps and submucous fibroids, where sensitivity remains suboptimal.^[19]

Hysteroscopy, in contrast, showed superior diagnostic accuracy across most endometrial pathologies. In the present study, hysteroscopy demonstrated high sensitivity and specificity for proliferative, secretory, and hyperplastic endometrium, and achieved 100% accuracy in diagnosing submucous myoma and carcinoma endometrium. Hyperplastic endometrium was the most common abnormal finding (24.0%) on hysteroscopy, correlating well with histopathological findings (32.0%). The ability of hysteroscopy to directly visualize the uterine cavity and facilitate targeted biopsy accounts for its enhanced diagnostic performance. These observations are supported by contemporary studies that have reported hysteroscopy as the most reliable modality for evaluating intrauterine pathology particularly for focal lesions.^[20]

Overall, the comparative analysis in this study demonstrates that while TVS serves as an effective initial screening modality, its limitations necessitate further evaluation using hysteroscopy, particularly in cases with persistent symptoms or inconclusive findings. The integration of hysteroscopy with histopathological examination provides a comprehensive diagnostic approach, improving detection rates and guiding appropriate management strategies. Recent evidence also supports a stepwise approach combining imaging and endoscopic evaluation to optimize diagnostic accuracy and minimize unnecessary invasive procedures.^[21]

CONCLUSION

The present study concludes that transvaginal sonography, though useful as a first-line screening tool, has limited sensitivity in detecting focal and subtle endometrial pathologies. Hysteroscopy, with its high diagnostic accuracy and ability to allow direct visualization and targeted biopsy, proves to be a superior modality for evaluating endometrial abnormalities in perimenopausal women with abnormal uterine bleeding.

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