

ORIGINAL RESEARCH

Hysteroscopic evaluation of women with postmenopausal bleeding with thickened endometrium

¹Dr. Padma Shukla, ²Dr. Neha Khatik, ³Dr. Pratibha Singh, ⁴Dr. Pushpendra Shukhla, ⁵Dr. Varsha Shukla

¹Assistant Professor, Department of Obstetrics & Gynaecology, Shyam Shah Medical College, Rewa

²Associate Professor, Department of Obstetrics & Gynaecology, Shyam Shah Medical College, Rewa

³Senior Resident, Department of Obstetrics & Gynaecology, Shyam Shah Medical College, Rewa

⁴Associate Professor Urology, Department of Surgery, Shyam Shah Medical College, Rewa, MP

⁵Deptt of Surgery, Shyam Shah Medical College, Rewa

Corresponding Author

Dr. Pratibha Singh

Senior Resident, Department of Obstetrics & Gynaecology, Shyam Shah Medical College Rewa

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ABSTRACT

Aim: Hysteroscopic evaluation of women with postmenopausal bleeding with thickened endometrium.

Material and methods: 100 patients were included in this study. Hysteroscopies was performed by vaginoscopic approach: with speculum, with adequate anesthesia, and with a 3- or 5-mm hysteroscope (30 degree view). Isotonic sodium chloride was used as distension medium with a pressure of 50-70mmHg and flow (100- 120ml/min). Hysteroscopic examination included inspection of the uterine cavity with a panoramic shot, visualization of both tubal ostia, and observation of the cervical canal by removing the hysteroscope. Histological findings were classified as normal, if they were atrophic and as abnormal in cases of endometrial polyps, submucous myomas, endometritis, adenomyosis ,endometrial hyperplasia , endometrial cancer.

Results: Sensitivity 89.6% vs 95.3%, specificity 87.3% vs 94.7%, positive predictive value 74.2% vs 93.18% and negative predictive value 95.3% vs 96.42% for ultrasonography+ histopathology and hysteroscopy respectively.

Conclusion: We concluded that the hysteroscopy plays a valuable role in the assessment of postmenopausal bleeding, particularly in the identification of polyps.

Keywords: Hysteroscopic, Postmenopausal, Bleeding, Thickened endometrium.

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INTRODUCTION

Postmenopausal bleeding, (PMB) is defined as uterine bleeding occurring after at least 1 year of amenorrhoea. it is a common clinical condition with an incidence of 10% immediately after menopause. Postmenopausal thickened endometrium indicates an increased risk of malignancy or other pathology (Hyperplasia or polyp). In postmenopausal bleeding women with thickened endometrium (endometrial thickness >4 mm) should be considered for further evaluation.¹ Most common cause of postmenopausal bleeding are atrophic endometrium, Endometrial hyperplasia, Endometrial polyp, uterine cancer, Bleeding related to the use of HRT. It is one of the most common symptom for which women seek medical care and evaluation. Postmenopausal bleeding is an alarming symptom, and is associated with many gynaecological problems. It is in 4-11% of menopausal women. PMB constitutes for 10% of the

cases in gynaecology outpatient clinic.²⁻⁴

Hysteroscopy is a procedure that involves direct visual inspection of cervical canal and uterine cavity. It was first described by Panteleoni in 1969 and done as an office procedure only. 1st optical hysteroscopy was introduced by David in 1907. first distension used was CO₂. In 1980s hysteroscopy replaced blind d&c as a standard procedure for precise diagnosis of intrauterine pathologies. The history of hysteroscopy is divided into three periods. Early period – during which, for technical reasons contact hysteroscopy was a necessity. Middle period -during which panoramic hysteroscopy was introduced. Late period- during which panoramic , contact and micro hysteroscopy with modern technology was done.⁵

AIM

To evaluate hysteroscopic findings in post menopausal patients with thickened endometrium.

MATERIAL AND METHODS

The prospective and observational study was conducted in the obstetrics and gynaecology department of S.S.M.C Rewa from March 2020 to February 2021. Post-menopausal women, attending the obstetrics and Gynaecology department of S.S.M.C. REWA, formed the study population. Purposive sampling was applied. 100 patients were included in this study. Hysteroscopies was performed by vaginoscopic approach: with speculum, with adequate anesthesia, and with a 3- or 5-mm hysteroscope (30 degree view). Isotonic sodium chloride was used as distension medium with a pressure of 50-70mmHg and flow (100- 120ml/min). Hysteroscopic examination included inspection of the uterine cavity with a panoramic shot , visualization of both tubal ostia ,and observation of the cervical canal by removing the hysteroscope. Histological findings were classified as normal, if they were atrophic and as abnormal in cases of endometrial polyps ,submucous myomas , endometritis ,adenomyosis ,endometrial hyperplasia , endometrial cancer. Consenting participants was interviewed using a pre -structured , pre -tested questionnaire . Ethical clearance was obtained from the institutional Ethical committee of institute of S.S.M.C REWA.

Statistical analysis were undertaken using chi – square test , mean , percentages and proportions . P values less than 0.005 were considered significant.

Instruments for Hysteroscopy Speculum

- Vulsellum
- Sponge holding forceps
- A hysteroscope with a light source
- Hysteroscopic
- Biopsy curette
- Distending medium – normal saline or ringer lactate with a drip set. Hysteromat
- Dilators Mathew Duncan

METHODOLOGY

Under anesthesia after catheterizing the bladder a bimanual pelvic examination was done. After

RESULTS

Table: 1 Age-wise distribution of all cases

Age-group	No. of cases	Percentage
41-50	32	32
51-60	50	50
61-70	18	18
Demography		
Rural	66	66
Urban	34	34
Parity		
P1	1	1
P2	10	10
P3	28	28
P4	23	23
P5	19	19
P6	11	11

introducing sim's speculum, the anterior lip of the cervix was caught with volsellum.

Rigid hysteroscope was introduced into the cervical canal under vision. The Hysteromat pressure is maintained between 100-160 mmHg. The tubing is attached to the inflow channel of the hysteroscope. The uterine cavity was examined and the following points were noted. The nature of surface and color of the endometrium were noted. The glandular opening, vascular pattern & presence of any other abnormalities, tubal ostia were visualized. The fluid used as distending medium will rinse off any blood clots present in the cavity. The time taken for the procedure and amount of fluid used were noted carefully at the end of the procedure. The patient was shifted to post operative ward where they were kept under observation for 24 hrs.

INCLUSION CRITERIA

- Women who reported after a period of at least 12 months of amenorrhoe after the age of 40 years provided that the amenorrhoea was not explained by medication or disease.
- All postmenopausal women whether symptomatic or asymptomatic having endometrial thickness more than or equal to 4 mm.

EXCLUSION CRITERIA

- Women with other obvious causes of bleeding from cervix and vagina . Women with known case of bleeding disorder .
- Premature menopausal women.
- Post menopausal women with postmenopausal bleeding who have been treated with hormones elsewhere.
- Transvaginal ultrasound showing adnexal pathology.
- Women with diagnosed genital tract malignancy.
- Women with diagnosed genital tract malignancy.
- Women with bleeding diathesis and cardiac disease

P7	7	7
P13	1	1

Regarding distribution according to the age group , in this study we observed 50% postmenopausal bleeding women with thickened endometrium in age group of 51-60yrs of age., followed by 32% in age group of 41-50 years , then 18% in age group of 61-70 yrs of age . In this study mean age of women with postmenopausal bleeding was 53.38 years. In this study among 100 patients of postmenopausal bleeding with thickened endometrium ,66 patients were from rural area and rest 34 patients were from urban area .maximum cases were from rural area. In this study out of 100 postmenopausal bleeding patients most of the patients were parity of 3 that was 28% then parity of 4 that was 23%. 19% of the postmenopausal patients were para 5. 11% of the patients were parity of 6. 10% of postmenopausal patients were para 2. 7% of postmenopausal patients were para 4 out of 100 patients had bleeding from cervical lip (trauma by vulsellum), which required tight vaginal packing for 6 hrs and careful monitoring. 12 patients had vomiting due to anesthetic drugs. There was no infective

morbidity. 25 patients had minimal cramps while 2 experienced severe pain. Fluid overload and electrolyte disturbance were also not encountered in any of these patients.

Comparison in endometrial thickness in age group among postmenopausal bleeding

In this study, in postmenopausal bleeding various groups of endometrial thickness were made. In endometrial thickness <5mm there were 4% patients .13% postmenopausal bleeding (PMB) patients were having endometrial thickness (ET) between 5mm-5.9mm. 18% of PMB patients were having ET between 6-6.9mm. 20% of PMB were having ET between 7- 7.9mm. 12% of PMB were having ET between 8-8.9mm. 5% of PMB were having ET between 9-9.5mm. 6% of PMB were having ET between 10-10.9 mm.2% of PMB were having ET between 11-11.9mm. 3% of PMB were having ET between 12-12.9mm.

Table 2. ENDOMETRIAL THICKNESS

Endometrial Thickness	No of patients	Percentage
<5mm	4	4
5mm-5.9mm	13	13
6mm-6.9mm	18	18
7mm-7.9mm	20	20
8mm-8.9mm	12	12
9mm-9.9mm	5	5
10mm-10.9mm	6	6
11mm-11.9mm	2	2
12mm-12.9mm	3	3
13mm-13.9mm	1	1
14mm-14.9mm	6	6
15mm-15.9mm	0	0
16mm-16.9mm	3	3
17mm-17.9mm	2	2
18mm-18.9mm	3	3
19mm-19.9mm	0	0
20mm-20.9mm	1	1
>21mm	1	1
Comparison between years of menopause and number of patients		
1	6	6%
2	24	24%
3	9	9%
4	7	7%
5	8	8%
6	7	7%
7	4	4%
8	11	11%
9	6	6%
10	10	10%
11	3	3%
>12	5	5%

In this study we observed that there were maximum postmenopausal bleeding women who presented with complaint of postmenopausal bleeding were having menopausal year 2 years and that included 24%. 6% of patients presented after 1 year of menopause .9% of patients presented after 3 years of menopause .7% of the patients presented after 4 years of menopause .8% of the patients presented after 5 years of menopause

.7% of the patients presented after 6 years of menopause.4% of the patients presented after 7 years of menopause.11% of the patients presented after 8 years of menopause .6% of the patients presented after 9 years of menopause . 10% of the patients presented after 10 years of menopause. 3% of the patients presented after 11 years of menopause .5% of the patients presented after >12 years of menopause.

Table: 3 Comparison of histopathology with endometrial thickness in postmenopausal bleeding .

Histopathology report	No of cases	Mean endometrial thickness	Percentage
Atrophic endometrium	36	3.87mm (2-5mm)	36%
Tissue insufficient for diagnosis (TIFD)	16	3.58mm (2.6-4mm)	16%
Cytoglandular hyperplasia	14	13.57mm (11-17mm)	14%
Atypical endometrial hyperplasia	6	7mm(6-8mm)	6%
Non atypical endometrial hyperplasia	12	9.16mm(8-11mm)	12%
Pyometra /endometritis	8	9mm (8-11mm)	8%
Endometrial carcinoma	8	17.2mm(16-21mm)	8%

50% of women with atrophic endometrium or TIFD had a mean endometrial thickness <5 mm and 50% of patients with endometrial pathology had a thickness >5mm. 36% of women had a atrophic endometrium with a mean endometrial thickness of 3.87mm.16% of patients had tissue deficient for diagnosis with a mean endometrial thickness 3.58mm. 14% of women had cytoglandular hyperplasia with a mean endometrial thickness 14mm. 6% of women had atypical endometrial hyperplasia with a mean endometrial thickness of 7mm. 12% of women had typical endometrial hyperplasia with a mean endometrial thickness of 9.16 mm. 8% of women had pyometra and senile endometritis having mean endometrial thickness 9 mm. 8% of women had endometrial

carcinoma having mean endometrial thickness 17.2mm.

Hysteroscopy followed by histopathological findings distribution among postmenopausal women in study

In this study among 100 postmenopausal bleeding women 43% were of atrophic endometrium , endometrial polyp patients were 14% .endometrial carcinoma , most common adenocarcinoma was in13% patients ,non atypical endometrial hyperplasia was seen in 14%, atypical endometrial hyperplasia 7% of patient,senile endometritis seen in 4% of cases, degenerated fibroid seen in 1% of patients , haemorrhagic endometrium seen in 1% of patients.

Table: 4 Hysteroscopic Findings

Hysteroscopic findings	No. of patients
Adenocarcinoma	13
Atrophic endometrium	43
Polyp	14
Atypical Endometrial hyperplasia	7
Degenerated Fibroid	1
Haemorrhagic endometrium	1
Non-atypical endometrial hyperplasia	14
Senile Endometritis	4
Non Secretory endometrium	3
TOTAL	100

Table: 5 Correlation with BMI

Range of BMI	Percentage of women
22-22.9	24%
23-23.9	31%
24-24.9	18%
25-25.9	8%
26-26.9	7%
27-27.9	2%
28-28.9	1%
29-29.9	3%

30-30.9	5%
31-31.9	1%

In this study 31% women had BMI between 23-23.9 .24% women had bmi between 22- 22.9,18% of the women had BMI between 24-24.9,8% of the women had BMI between 25- 25.9,7% of the women had BMI between 26-26.9,2% had BMI between 27-27.9. 1% had BMI between 28-28.9,3% had BMI between 29-29.9. 5%had BMI between 30-30.9,1% had BMI between 31-31.9.

Table: 6 Correlation between Hysteroscopic findings and mean BMI

Hysteroscopic Findings	Mean BMI
Atrophic endometrium	24.1±2
Endometrial polyp	29±2
Endometrial carcinoma	33± <u>2</u>
Atypical endometrial hyperplasia	25±2
Non atypical endometrial hyperplasia	24± <u>2</u>

In this study mean BMI in women with atrophic endometrium was 24±2. Mean BMI in women with endometrial polyp was 29±2. Mean BMI in women with endometrial carcinoma was 33±2. Mean BMI in women with atypical endometrial hyperplasia was 25±2. Mean BMI in women with non atypical endometrial hyperplasia was 24±2.

Table 7 Relation between BMI, postmenopausal bleeding and endometrial carcinoma

Range of BMI	Endometrial carcinoma %
18.9-24.9 normal	1%
24.9-29.9	1%
Obesity grade 1(30-35.5)	5%
Obesity grade 2 (35.5-39.9)	1%

In this study we observed that there is correlation between bmi and endometrial carcinoma , which is among one of the most important cause of postmenopausal bleeding .among 8% of the postmenopausal bleeding cause ,it was endometrial carcinoma . among 8% , 5% of them were having BMI in range of 30-35.5 i.e. obesity grade 1 and 1% of the endometrial carcinoma was having BMI un range of 35.5-39.9 .

Table: 8 Comparison of histopathology with endometrial volume in women with postmenopausal bleeding

	No of Cases	Mean Endometrial Volume CM3	Percentage
Atrophic endometrium	36	12.72(8.46-14.20)	36%
Tissue insufficient for diagnosis	16	11.50 (10.45-12.46)	16%
Cytoglandular hyperplasia	14	59.34 (28.86-95.70)	14%
Nonsecretory endometrium	6	43.87(34.61-63.40)	6%
Secretory endometrium	12	48.78 (34.61-63.40)	12%
Pyometra /endometritis	8	49.33(26.8-68.54)	8%
Endometrial carcinoma	8	136.03(102.8-175.84)	8%

When an mean endometrial volume was <13cm³ the histopathological report is atrophic endometrium which was correlating with the hysteroscopic findings .An endometrial volume >13 cm³ is associated with the endometrial pathology.

Table 9 Comparison between years of menopause and number of patients

No of years	No of Patients	% of patients
1	6	6%
2	24	24%
3	9	9%
4	7	7%

5	8	8%
6	7	7%
7	4	4%
8	11	11%
9	6	6%
10	10	10%
11	3	3%
>12	5	5%
Total	100	100%

In this study we observed that there were maximum postmenopausal bleeding women who presented with complaint of postmenopausal bleeding were having menopausal year 2 years and that included 24%. 6% of patients presented after 1 year of menopause .9% of patients presented after 3 years of menopause .7% of the patients presented after 4 years of menopause .8% of the patients presented after 5 years of menopause

.7% of the patients presented after 6 years of menopause.4% of the patients presented after 7 years of menopause.11% of the patients presented after 8 years of menopause .6% of the patients presented after 9 years of menopause . 10% of the patients presented after 10 years of menopause. 3% of the patients presented after 11 years of menopause .5% of the patients presented after >12 years of menopause.

Table 10 Intensity of Symptom

Intensity	No. of Patients	Percentage
Mild	54	54
Moderate	46	46
Total	100	100

In this study we observed that postmenopausal bleeding patients 54% of them presented with mild intensity of symptoms, and rest 46% of them presented with moderate intensity of symptoms.

SENSITIVITY AND SPECIFICITY OF ULTRASONOGRAM FOLLOWED BY HISTOPATHOLOGY IN DETECTING ABNORMALITY-

Total number of abnormal cases identified in ultrasonogram is 35. Out of 35 cases , histopathology confirmed it to be normal in 26 cases. So true positive (a) -26

False positive (b) -9

Ultrasonogram detected normal endometrium in 65 cases.

Out of which, histopathology report confirmed normal endometrium in 62 cases. True negative (d)-62

False negative (c) -3

Table: 11 Ultrasonography + Histopathology

	ABNORMAL	NORMAL	
ABNORMAL	26 (a)	9(b)	35
NORMAL	3(c)	62(d)	65
TOTAL	29	71	100

Table: 12 ultrasonography followed by histopathology

SENSITIVITY	89.6%
SPECIFICITY	87.3%
POSITIVE PREDICTIVE VALUE	74.28%
NEGATIVE PREDICTIVE VALUE	95.3%

Table: 13 Statistical findings in hysteroscopy

SENSITIVITY	95.3%
SPECIFICITY	94.7%
POSITIVE PREDICTIVE VALUE	93.18%
NEGATIVE PREDICTIVE VALUE	96.42%

Table: 14 Comparison of statistical value between hysteroscopy and ultrasonography followed by histopathology -

Statistics	Ultrasonography+ Histopathology	Hysteroscopy
SENSITIVITY	89.6%	95.3%
SPECIFICITY	87.3%	94.7%

POSITIVE PREDICTIVE VALUE	74.2%	93.18%
NEGATIVE PREDICTIVE VALUE	95.3%	96.42%

In this study group of 100 patients fitting into this criteria were subjected to ultrasonography, hysteroscopy and then histopathology {hysteroscopically guided biopsy or direct endometrial biopsy were done. ultrasonography identified abnormality in 35 cases. hysteroscopy identified abnormality in 44 cases. Sensitivity 89.6% vs 95.3%, specificity 87.3% vs 94.7% , positive predictive value 74.2% vs 93.18% and negative predictive value 95.3% vs 96.42% for ultrasonography+ histopathology and hysteroscopy respectively .

Table: 15

	Abnormality Detected	Abnormality Not Detected	P Value
HYSTEROSCOPY	44	2	0.04
ULTRASONOGRAM+ HISTOPATHOLOGY	35	3	

P value <0.05, the chi square test shows that there is significant difference in hysteroscopy and ultrasonography followed by histopathology in diagnosing postmenopausal bleeding .

DISCUSSION

In this study, the authors conducted hysteroscopic evaluations of postmenopausal women in accordance with the recommended guidelines, in order to assess the utility of hysteroscopy in the evaluation of postmenopausal bleeding. In relation to the distribution based on age groups, our study revealed that 50% of women experiencing postmenopausal bleeding exhibited a thickened endometrium within the age range of 51-60 years. This was followed by 32% of cases occurring in the age group of 41-50 years, and subsequently 18% in the age group of 61-70 years. The study revealed that the average age of women experiencing postmenopausal bleeding was 53.38 years. In a study conducted by Ribeiro et al. (year) in Brazil, the reported average age was 61.1 years.⁶ In a study conducted by Metello et al. in Portugal, the reported average age was 61.5 years. Another study conducted in Portugal reported an average age of 64.9 years. Similarly, Tinelli et al. from Italy reported an average age of 58.6 years, which aligns with the findings of this study.⁷⁻⁹ In a study conducted in India, it was observed that a significant proportion of women fell within the age range of 50-55 years, similar to the present study.¹⁰ In a separate study conducted by Nagalakshmi et al. in India, the average age of women was found to be 54.76 years¹¹. According to Junnare et al.¹² the average age of women in their study was reported to be 53.15 years. The reason for the relatively younger age profile of women in studies from Asian countries, in comparison to those from Western countries, may be attributed to a comparatively lower age of menopause. According to an estimation, the mean age at which Asian women experience menopause is 46 years.¹⁰ A total of 4% of the patient population experienced bleeding from the cervical lip due to trauma caused by the use of a vulsellum instrument. This resulted in the need for tight vaginal packing for a duration of 6 hours, accompanied by diligent monitoring. A total of 12 patients experienced emesis as a result of the administration of anesthetic medications. There was an absence of infectious

morbidity. Out of the total sample size of 27 patients, the majority (25 individuals) reported experiencing minimal cramps, while a minority (2 individuals) reported experiencing severe pain. None of these patients experienced fluid overload or electrolyte disturbance. All of these complaints may be attributed to hormonal fluctuations that are commonly observed during the menopausal transition. The decrease in estrogen secretion that occurs during menopause is associated with a decline in sexual drive and the development of symptoms such as vaginal dryness. The user has provided a numerical range, specifically.^{13,14} This study examined a cohort of 100 women experiencing postmenopausal bleeding. Among these women, 43% exhibited atrophic endometrium, while 14% were diagnosed with endometrial polyps. Endometrial carcinoma, the most prevalent form of adenocarcinoma, was observed in 13% of the patient population. Non-atypical endometrial hyperplasia was identified in 14% of patients, while atypical endometrial hyperplasia was present in 7% of patients. Senile endometritis was detected in 4% of cases, degenerated fibroid in 1% of patients, and haemorrhagic endometrium in 1% of patients. The detection rate of endometrial carcinoma varies across different studies, with reported percentages ranging from 0% (Gupta et al) to 11.7% (Tandulwadkar et al).^{10,15} The presence of the detected substance was observed in 18.2% of cases by Sarvi et al, and in 27.14% of cases by Gupta et al.^{15,16} However, the absence of such reports was noted in the cases of other researchers, namely Sharma and Tiwari, as well as Junnare et al.^{12,17} In a study conducted by Junnare et al., the presence of the phenomenon was observed in 30% of the cases. The observed variations in pathologies across different studies may be attributed to the heterogeneity of samples, including both their composition and size. When examining postmenopausal bleeding and its association with various endometrial pathologies, it is important to consider that studies with smaller sample sizes may not accurately reflect the true proportions of these pathologies. Instead, the observed frequencies in such

studies may be due to chance rather than being representative of the actual prevalence. This study compares the diagnostic performance of ultrasonography combined with histopathology versus hysteroscopy. The sensitivity values were found to be 89.6% and 95.3% for ultrasonography + histopathology and hysteroscopy, respectively. Similarly, the specificity values were 87.3% and 94.7% for ultrasonography + histopathology and hysteroscopy, respectively. The positive predictive value was 74.2% for ultrasonography+ histopathology and 93.18% for hysteroscopy. Lastly, the negative predictive value was 95.3% for ultrasonography+ histopathology and 96.42% for hysteroscopy. Rebeiro et al. conducted a study in which they presented the sensitivity and specificity values of hysteroscopy for various conditions. Specifically, they reported a sensitivity of 92.6% and specificity of 65.8% for polyps, a sensitivity of 52.6% and specificity of 95.9% for fibroids, a sensitivity of 94.4% and specificity of 97% for cancer or hyperplasia, and a sensitivity of 35.3% and specificity of 99.6% for normal endometrium.⁶ In a study conducted by Tandulwadkar et al, similar to the current study, it was observed that fibroids exhibited a sensitivity and specificity of 100%, while endometrial carcinoma showed a sensitivity of 87.5% and specificity of 98.1%.¹⁰

CONCLUSION

We concluded that the hysteroscopy plays a valuable role in the assessment of postmenopausal bleeding, particularly in the Identification of polyps and suspicious area of endometrial carcinoma.

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