The Egyptian Journal of Hospital Medicine (October 2022) Vol. 89 (2), Page 6297- 6304

Hysteroscopy in the Evaluation of Postmenopausal Bleeding

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ABSTRACT

Background: Menopause is the loss of ovarian follicular activity, which results in a permanent cessation of menstruation. Postmenopausal bleeding (PMB) is defined as bleeding that starts twelve months following the last menstrual period. Hysteroscopy enables (see and treat) approaches by allowing macroscopic diagnosis of benign lesions and their excision, but histological samples must always be taken.

Objective: This study aimed to assess the accuracy of hysteroscopy use in the diagnosis of the causes of bleeding in women with postmenopausal bleeding.

Methodology: The current prospective cohort study was carried out on 237 postmenopausal women with postmenopausal bleeding recruited from Ain Shams University Maternity hospital (Hysteroscopy Unit) during the period between December 2016 and October 2017.

Results: One of the difficulties that we have faced, there was no single operator assigned to perform the whole study population. In this study we found that the mean age of the studied population was 56±6 years, while the mean body mass index was 30±4 (kg/m²) also the mean duration of menopause was 7±5years. This study showed that the accuracy of hysteroscopy in diagnosis of endometrial carcinoma was 97.9%, sensitivity of hysteroscopy in diagnosis of endometrial carcinoma was (82.6%), and specificity was (99.5%).

Conclusions: Hysteroscopy is the fundamental tool for accurate identification of various endouterine diseases in women with PMB. Hysteroscopy is useful in lowering the number of hospital visits, admissions, and overall expenses in older individuals who are at high risk for any invasive operation like a hysterectomy.

Keywords: Hysteroscopy, Postmenopausal bleeding, Menopause.

INTRODUCTION

Menopause is the loss of ovarian follicular activity, which results in a permanent cessation of menstruation. Postmenopausal bleeding (PMB) is defined as bleeding that starts twelve months following the last menstrual period [(1)]. Up to 69% of postmenopausal women who are referred to gynaecological outpatient clinics for treatment have postmenopausal bleeding as their primary gynecologic complaint [(2)]. About 90% of endometrial cancer patients, vaginal bleeding is the only complaint voiced [(3)].

Bleeding after menopause is a symptom that requires careful examination. There are numerous less sinister explanations, but at worst it could indicate malignant transformation [(4)]. Menopause is the most common time for endometrial cancer to develop [(5)].

In 90% of instances, postmenopausal bleeding coexists with endometrial cancer. However, endometrial cancer only occurs in 10–15% of postmenopausal bleeding women [(6)].

Histology provides a conclusive diagnosis for postmenopausal hemorrhage. In the past, endometrial samples were collected using dilatation and curettage; today, dilatation and biopsy are the most common methods [(7)].

Dilatation and curettage (D&C) is a blind operation that frequently yields non-representative biopsies with diagnostic failure rates that range from 10 to 25% and false-negative rates that range from 2 to 10%. According to earlier findings, less than half of the uterine cavity was sampled with the curette in 60% of the women who underwent curettage, and the cause of bleeding was frequently left unidentified [(8)].

The introduction of intrauterine endoscopy has allowed clinician to evaluate an area of the body that was previously accessible only by the procedure of blind dilation and curettage (D&C). Many studies have shown hysteroscopy to be superior to D&C, yet its use has yet to be appreciated adequately [(9)].

Clinicians can now check a portion of the body that was previously only accessible through the procedure of blind dilation and curettage thanks to intrauterine endoscopy (D&C). Although its use has not yet been fully understood, multiple studies have shown that hysteroscopy is superior to D&C [(9)].

Hysteroscopy enables (see and treat) approaches by allowing macroscopic diagnosis of benign lesions and their excision, but histological samples must always be taken [(10)]. To assess the effectiveness of hysteroscopy in identifying endometrial disease, a histological diagnosis is the gold standard [(6)].

This study aims to assess the accuracy of hysteroscopy use in the diagnosis of the causes of bleeding in women with postmenopausal bleeding.

PATIENTS AND METHODS

The current prospective cohort study was carried out on 237 postmenopausal women with postmenopausal bleeding recruited from Ain Shams University Maternity Hospital (Hysteroscopy Unit) during the period between December 2016 and October 2017.

Received: 30/06/2022
Accepted: 06/09/2022

Inclusion criteria:

- Age: - postmenopausal women considered if the patients report absence of menstruation for at least one year after age of forty.
- History of vaginal bleeding.
- Last menstrual period.
- Severity of vaginal bleeding.
- Parity.
- Number of year after menopause.
- Symptoms of pelvic infection.
- Drug history especially hormonal treatment or anticoagulant therapy.

Exclusion criteria:

1- History of bleeding tendency as immune thrombocytopenic purpra (ITP).
2- Associated ovarian swelling as benign ovarian cysts.
3- Hormonal therapy as hormonal replacement therapy by estradiol (E2) as in use postmenopausal osteoporosis.
4- Patient receiving drug affecting coagulationas anticoagulants in cases of previous deep venous thrombosis.

Methods:

All patients enrolled in this study were subjected to:

A) **Full history taking with special emphasis on:**
- Age postmenopausal women 40 years old or more.
- Parity.
- Complain onset, duration, amount of vaginal bleeding and treatment reared.
- Menstrual history:- presence or absence of pain and its degree menopausal status and number of year after menopause.
- Family history. History of similar complain.
- Past medical and surgical history.

B) **Full Examination:**
- General and abdominal examination.
- Full pelvic examines.
- Detect the side of the uterus, its position and mobility.
- Detect protruding submucous fibroids, protruding endometrial polyps or any other cervical masses.
- Detect mass in Douglas pouch in cases of cancer ovary pedunculated sub serous fibroids or any other adnexal masses.
- Routine properties investigation in addition to a serum pregnancy test if pregnancy suspected.

An ultrasound was done transvaginally. Transvaginal ultrasound was used to measure the endometrium's double layer at its thickest point in the longitudinal plane. In a longitudinal scan, endometrial thickness was calculated as the greatest separation between the two myometrial surfaces. The endometrial thickness cutoff for postmenopausal women was set at >5 mm.

To rule out extrauterine pelvic masses, the adnexal region was additionally covered during transvaginal ultrasonography. The technique was done in the lithotomy position for all outpatient hysteroscopies, and neither local nor general anaesthesia was used (no use of speculum or tenaculum). After identifying the external os and seeing the cervix, a gentle introduction of the hysteroscope into the uterine cavity was made. Endometrial biopsies were carried out in full view.

Hysteroscopic equipment (Karl Storz, Tuttlingen, Germany) telescope is a rigid, 30° Hamou II hysteroscope, model 26157 BT, with a Hopkins II lens system **(figure 1)**.

The sheath has a 4mm outer diameter. The fibroptic light source is Xenon Nova, model 20131520 manufactured by Storz (Karl Storz).

Distention media is normal saline, using a Hamou endomat infusion pump, model 26331020 at an infusion rate of 100mL/min with pressure of 80 mmHg and suction of 0.2 psi (pound per square inch). The used camera is Karl Storz-endoscope, telecom DXpal model 20232020 by Storz. The Monitor is TVCR LG, plasma monitor 50 Hz, AC 100-270 V to display videotape the hysteroscopic events.

We classified a hysteroscopic finding as a pre-biopsy diagnosis based on how the uterine cavity's surface looked.

If hysteroscopic findings are proliferative, secretory, or atrophic, they are considered normal. Endometrial polyps, submucous myomas, endometritis, adenomyosis, endometrial hyperplasia, and endometrial cancer are considered abnormal findings.

Endometrial hyperplasia can be suspected hysteroscopically if there is a focal or diffuse increase in endometrial thickness, an irregular aspect to the endometrial surface, corrugated endometrial hypertrophy without vascularization, a decrease in interglanduler space, cystic formations protruding into the uterine cavity, an increase in dilated superficial vessels on panoramic view, abundant and anomalous vascularization, haematic collection, and necrosis.

The indications for endometrial cancer included aberrant vessels, uneven tissue, and glossy necrotic tissue.

Micropapillary, cerebroid, or polypoid hypertrophy with a softened, friable consistency, irregular vascularization, necrotic regions, mammillations, and cerebroid irregularities linked to irregular, polylobular, friable excrescences with necrosis or haemorrhage.

To diagnose the lesions, standard histological criteria were applied. In the current investigation, the pathologist had access to the request form, which would have contained the hysteroscopic impression made by these surgeons.

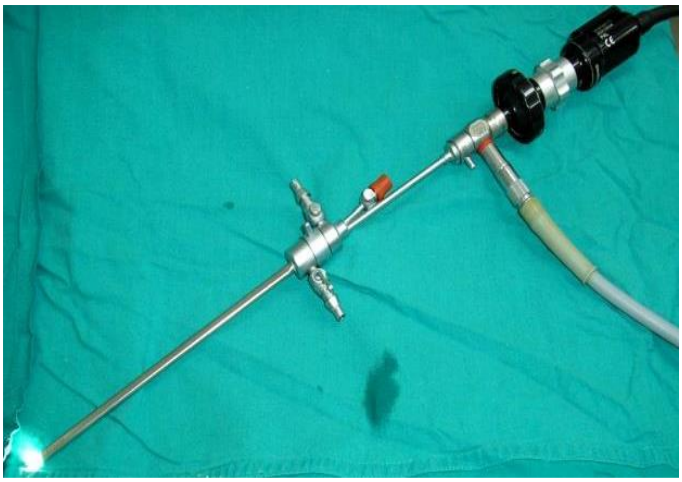

Figure (1): Telescope with in-out sheath with a side channel 4.5 mm (Storz, Tuttlingen, Germany).

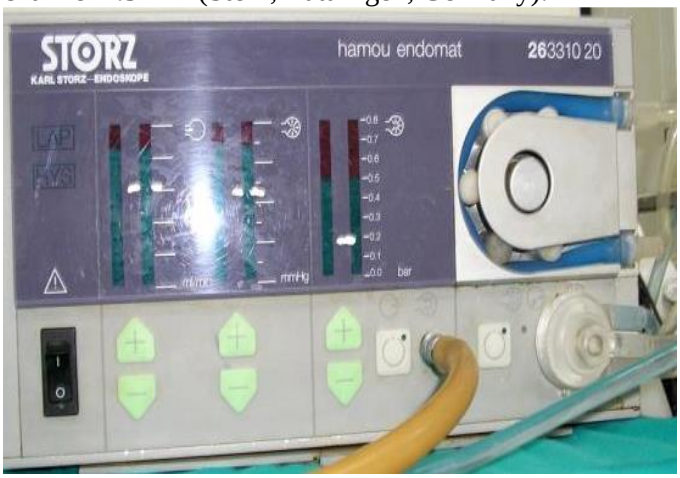

Figure (2): Continuous suction irrigation pump "Endomat".

Ethical consent:

This study was ethically approved by the Institutional Review Board of the Faculty of Medicine, Ain Shams University. Written informed consent was taken from all participants. The study was conducted according to the Declaration of Helsinki.

Statistical Methods

Data were analyzed using Stata® version 14 (StataCorp LLC, College Station, TX, USA) and XLSTAT© version 2014.5.03 (Addinsoft, Inc., Brooklyn, NY, USA). The means and standard deviation of continuous numerical variables and the median and interquartile range of discontinuous data were provided. Numbers and percentages were used to present categorical data.

Using 2-by-2 contingency tables to determine sensitivity, specificity, positive and negative predictive values, and overall accuracy, the diagnostic efficacy of hysteroscopy was compared with histopathology as the gold-standard test (correct classification rate). Cohen's kappa, Scott's bias-adjusted kappa, and Bennett's prevalence-adjusted bias-adjusted kappa were used to calculate inter-method agreement (PABAK). According to **Altman [(11)],** the coefficients of agreement were interpreted as follows:

Coefficients of agreement	Strength of agreement
< 0.20	Poor
0.21 - 0.40	Fair
0.41 - 0.60	Moderate
0.61 - 0.80	Good
0.81 - 1.00	Very good

P-values <0.05 were considered statistically significant.

RESULTS

The current prospective cohort study was carried out on 237 postmenopausal women with postmenopausal bleeding recruited from Ain Shams University Maternity Hospital (Hysteroscopy Unit) during the period between December 2016 and october 2017.

In our patients, we did endometrial biopsies under direct observation with an office hysteroscope during the outpatient hysteroscopy using a 4mm hysteroscopy (30-degree view) and isotonic sodium chloride as a distention medium.

Table (1): Descriptive statistics for the whole study population regard as general characteristics

Variable	mean	Minimum - Maximum
Age (years)	56 ± 6	48 – 80
BMI (kg/m^2)	30 ± 4	18 – 39
Duration of menopause (years)	7 ± 5	2 – 30
Duration of PMB (weeks)	2 ± 1	1 – 16

Data are mean ± SD, median (interquartile range) or number (%). Table (2) shows that commonst cause of postmenuposal bleeding as regard hysteroscopic findings was endometrial polyp 48.1%.

Table (2): Hysteroscopic findings in the study population

Diagnostic method	Finding	n	%
Hysteroscopy	Endometrial atrophy	55	23.2%
	Endometrial hypertrophy	73	30.8%
	Endometrial polyp	114	48.1%
	Myoma	4	1.7%
	Endometrial hyperplasia	8	3.4%
	Endometrial carcinoma	20	8.4%

Table (3) the most common cause of post-menopausal bleeding as regard histopathological finding was endometrial polyp 55.7%.

Table (3): Histopathological findings in the study population

Diagnostic method	Finding	n	%
Histopathology	Endometrial atrophy	18	7.6%
	Endometrial hypertrophy	14	5.9%
	Endometrial polyp	132	55.7%
	Myoma	0	0.0%
	Endometrial hyperplasia	50	21.1%
	Endometrial carcinoma	23	9.7%

Data are number (n) and percentage (%).

Table (4) shows that the accuracy of hysteroscopy in diagnosis of endometrial atrophy was 78.5%. sensitivity of hysteroscopy to endometrial atrophy was (61.1%) and specificity was (79.9%).

Table (4): Accuracy of hysteroscopy for diagnosis of endometrial atrophy

	Histopathology		***Hysteroscopy***
	Endometrial atrophy	**No endometrial atrophy**	
Endometrial atroph	11	44	55
No endometrial atrophy	7	175	182
Row total	18	219	237
Statistic	**Value**	**95% LCL**	**95% UCL**
Correct classification	78.5%	73.2%	83.7%
Misclassification	21.5%	16.3%	26.8%
Sensitivity	61.1%	38.5%	79.6%
Specificity	79.9%	74.1%	84.7%
False positive rate	20.1%	14.8%	25.4%
False negative rate	38.9%	18.5%	59.3%
Prevalence	7.6%	4.2%	11.0%
Positive predictive value (PPV)	20.0%	9.4%	30.6%
Negative predictive value (NPV)	96.2%	93.4%	98.9%
Positive likelihood ratio (LR+)	3.04	1.93	4.79
Negative likelihood ratio (LR-)	0.49	0.27	0.87
Relative risk (RR)	5.20	2.18	12.41
Odds ratio (OR)	6.25	2.35	16.60

Data in contingency tables are presented as frequency.

Table (5) shows that the accuracy of hysteroscopy in diagnosis of endometrial hypertrophy was 74.3%.sensitivity of hysteroscopy to endometrial hypertrophy was (92.9%) and specificity was (73.1%).

Table (5): Accuracy of hysteroscopy for diagnosis of endometrial hypertrophy

	Histopathology		**Hystero-scopy**
	Endometrial hypertrophy	**No endometrial hypertrophy**	
Endometrial hypertrophy	13	60	73
No endometrial hypertrophy	1	163	164
Row total	14	223	237
Statistic	Value	95% LCL	95% UCL
Correct classification	74.3%	68.7%	79.8%
Misclassification	25.7%	20.2%	31.3%
Sensitivity	92.9%	66.1%	100.0 %
Specificity	73.1%	66.9%	78.5%
False positive rate	26.9%	21.1%	32.7%
False negative rate	7.1%	0.0%	19.0%
Prevalence	5.9%	2.9%	8.9%
Positive predictive value (PPV)	17.8%	9.0%	26.6%
Negative predictive value (NPV)	99.4%	98.2%	100.0 %
Positive likelihood ratio (LR+)	3.45	2.66	4.48
Negative likelihood ratio (LR-)	0.10	0.01	0.65
Relative risk (RR)	29.21	5.53	154.26
Odds ratio (OR)	35.32	6.37	195.75

Data in contingency tables are presented as frequency.

Table (6) show that the accuracy of hysteroscopy in diagnosis of endometrial polyp was (85.7%). sensitivity of hysteroscopy to endometrial polyp was (80.3%) and specificity was (92.4%).

Table (6): Accuracy of hysteroscopy for diagnosis of endometrial polyp

	Histopathology		**Hystero -scopy**
	Endo-metrial polyp	**No endo-metrial polyp**	
Endometrial polyp	106	8	114
No endometrial polyp	26	97	123
Row total	132	105	237
Statistic	Value	95% LCL	95% UCL
Correct classification	85.7%	81.2%	90.1%
Misclassification	14.3%	9.9%	18.8%
Sensitivity	80.3%	72.6%	86.2%
Specificity	92.4%	85.4%	96.2%
False positive rate	7.6%	2.6%	12.6%
False negative rate	19.7%	13.0%	26.4%
Prevalence	55.7%	49.4%	62.0%
Positive predictive value (PPV)	93.0%	88.3%	97.7%
Negative predictive value (NPV)	78.9%	71.6%	86.1%
Positive likelihood ratio (LR+)	10.54	5.39	20.63
Negative likelihood ratio (LR-)	0.21	0.15	0.30
Relative risk (RR)	4.40	3.13	6.19
Odds ratio (OR)	49.43	21.77	112.23

Table (7) show that the accuracy of hysteroscopy in diagnosis ofsubendometrial myoma was (98.3%), specificity was (98.3%).

Table (7): Accuracy of hysteroscopy for diagnosis of subendometrial myoma

	Histopathology		***Hysteros copy***
	Subendo metrial myoma	**No subendo metrial myoma**	
Subendometrial myoma	0	4	4
No subendometrial myoma	0	233	233
Row total	0	237	237
Statistic	Value	95% LCL	95% UCL
Correct classification	98.3%	96.7%	100%
Misclassification	1.7%	0.0%	3.3%
Sensitivity	-	-	-
Specificity	98.3%	95.5%	99.5%
False positive rate	1.7%	0.1%	3.3%
False negative rate	-	-	-
Prevalence	0.0%	0.0%	0.0%
Positive predictive value (PPV)	0.0%	0.0%	0.0%
Negative predictive value (NPV)	100%	100%	100%
Positive likelihood ratio (LR+)	-	-	-
Negative likelihood ratio (LR-)	-	-	-
Relative risk (RR)	-	-	-
Odds ratio (OR)	-	-	-

Table (8) show that the accuracy of hysteroscopy in diagnosis of endometrial hyperplasia was (81.4%). sensitivity of hysteroscopy to endometrial hyperplasia was (14.0%) and specificity was (99.5%).

Table (8): Accuracy of hysteroscopy for diagnosis of endometrial hyperplasia

	Histopathology		**Hystero -scopy**
	Endo-metrial hyperplasia	**No endo-metrial hyperplasia**	
Endometrial hyperplasia	7	1	8
No endometrial hyperplasia	43	186	229
Row total	50	187	237
Statistic	**Value**	**95% LCL**	**95% UCL**
Correct classification	81.4%	76.5%	86.4%
Misclassification	18.6%	13.6%	23.5%
Sensitivity	14.0%	6.7%	26.6%
Specificity	99.5%	96.7%	100.0%
False positive rate	0.5%	0.0%	1.6%
False negative rate	86.0%	76.7%	95.3%
Prevalence	21.1%	15.9%	26.3%
Positive predictive value (PPV)	87.5%	64.6%	100.0%
Negative predictive value (NPV)	81.2%	76.2%	86.3%
Positive likelihood ratio (LR+)	26.18	3.30	207.87
Negative likelihood ratio (LR-)	0.86	0.77	0.97
Relative risk (RR)	4.66	3.24	6.70
Odds ratio (OR)	30.28	5.09	180.24

Table (9) shows that the accuracy of hysteroscopy in diagnosis of endometrial carcinoma was (97.9%); sensitivity of hysteroscopy to endometrial carcinoma was (82.6%) and specificity was (99.5%), for diagnosis of endometrial carcinoma versus histopathology as the gold standard test.

Table (9): Accuracy of hysteroscopy for diagnosis of endometrial carcinoma

	Histopathology		***Hyster-oscopy***
	Endo-metrial carcinoma	**No endo-metrial carcinoma**	
Endometrial carcinoma	19	1	20
No endometrial carcinoma	4	213	217
Row total	23	214	237
Statistic	**Value**	**95% LCL**	**95% UCL**
Correct classification	97.9%	96.1%	99.7%
Misclassification	2.1%	0.3%	3.9%
Sensitivity	82.6%	62.1%	93.5%
Specificity	99.5%	97.1%	100.0%
False positive rate	0.5%	0.0%	1.4%
False negative rate	17.4%	3.1%	31.7%
Prevalence	9.7%	5.9%	13.5%
Positive predictive value (PPV)	95.0%	85.4%	100.0%
Negative predictive value (NPV)	98.2%	96.4%	99.9%
Positive likelihood ratio (LR+)	176.78	24.79	1260.51
Negative likelihood ratio (LR-)	0.17	0.07	0.43
Relative risk (RR)	51.54	20.55	129.27
Odds ratio (OR)	1011.75	150.55	6799.42

The agreement between the two methods was moderate for endometrial atrophy and endometrial hypertrophy (Bennett's kappa =.57 and.49, respectively), good for endometrial polyp and endometrial hyperplasia (Bennett's kappa =.71 and.63, respectively) and very good for subendometrial myoma and endometrial carcinoma (Bennett's kappa =0.97 and 0.96, respectively) (Table 10).

Table (10): Inter-method agreement between hysteroscopy and histopathology for diagnosis of various endometrial and subendometrial lesions

	Measure of agreement		
Lesion	**Cohen's kappa (κ)**	**Scott's bias-adjusted kappa (BAK)**	**Bennett's prevalence-adjusted bias-adjusted kappa (PABAK)**
Endometrial atrophy	0.21	0.17	0.57
Endometrial hypertrophy	0.22	0.14	0.49
Endometrial polyp	0.71	0.71	0.71
Subendometrial myoma	0.00	-0.01	0.97
Endometrial hyperplasia	0.19	0.14	0.63
Endometrial carcinoma	0.87	0.87	0.96

DISCUSSION

Menopause is the reduction of ovarian follicular activity, which leads to a permanent stop of menstruation. Postmenopausal bleeding is defined as bleeding that starts 12 months following the last menstrual cycle [(12)]. Postmenopausal bleeding is a serious issue and the main reason women are sent to gynaecologists for treatment after menopause. In order to address this issue, a precise diagnosis technique is needed [(13)].The diagnosis of PMB should be made with the highest degree of precision and with the least amount of danger and expense to the patient. Hysteroscopic guided biopsy has replaced endometrial biopsy as the "gold standard" diagnostic method for assessing PMB since hysteroscopy's invention two decades ago [(14)].

The three main causes of PMB are atrophic endometritis, endometrial hyperplasia, and endometrial cancer [(15)]. Endometrial polyps may be undetected during blind endometrial biopsies, which could result in an underdiagnosis of this condition following menopause [(16)].

In this study we found that the mean age of the studied population was 56±6 years, while the mean body mass index was 30±4 (kg/m²) also the mean duration of menopause was 7±5years. These results agreed with **Korkmazer *et al.* [(17)],** who found that the mean age was 55.2±7.6 years, the mean of body mass index was 30 ± 4.7 (kg/m²) and the mean duration of menopause was 6.5±3.1years.

In our study, the range of previous deliveries were ranging from (0-14); these results disagreed with **Korkmazer *et al.* [(17)]** who found the mean number of previous deliveries ranging from (0-6) this may be attributed to cultural habit in our population.

In this study, the number of previous abortion ranged from (0-10). In this study, 51.1% of patients were diabetic, while 19.4% of them were hypertensive. These results are consistent with **Tandulwadkar *et al.* [(18)]** who found that 50% of patients were Diabetic and 25% were hypertensive.In our study, the most common cause of post-menopausal bleeding as regard hysteroscopic findings was endometrial polyp (48.1%). This result agreed with **Korkmazer *et al.* [(17)]** who concluded that the commonest pathology detected by hysteroscopy was endometrial polyp (38.5%), and **Elfayomy *et al.* [(6)]** who found that the commonest pathology detected by hysteroscopy was endometrial polyp 30.1%

In this study, the most common cause of post-menopausal bleeding as regard histopathological finding was endometrial polyp 55.7%. On the other hand, these results disagreed with **Pushpa *et al.* [(12)]** how found that the most common cause of postmenopausal bleeding was atrophic endometrium 38.33%.

The current study revealed that the accuracy of hysteroscopy in diagnosis of endometrial atrophy was 78.5%, sensitivity of hysteroscopy in diagnosis of endometrial atrophy was 61.1%, and specificity was 79.9%. These results disagreed with those reported by **Pop-Trajković-Dinić *et al.* [(19)]** how found the accuracy of hysteroscopy in diagnosis of endometrial atrophy was 12.4%, sensitivity 100%, specificity 98% and agreed with **Tandulwadkar *et al.* [(18)]** who found that the accuracy was 65%, sensitivity 87.5% and specificity 80%.

This study revealed that the accuracy of hysteroscopy in diagnosis of endometrial polyp was (85.7%), sensitivity of hysteroscopy in diagnosis of endometrial polyp was (80.3%), and specificity was (92.4%). The present results agreed with **Korkmazer *et al.* [(17)]** who found that the accuracy of hysteroscopy in diagnosis of endometrial polyp was 75.1%, and sensitivity 87%, specificity 85%, and disagreed with **Dias *et al.* [(20)]** how found that the accuracy was 91.8%, and sensitivity was 96.4%, and specificity was 74.6%, also **Pop-Trajkovic-Dinic *et al.* [(18)]** who found that the sensitivity was 94%, and specificity was 100%. This study revealed that the accuracy of hysteroscopy in diagnosis of subendometrial myoma was 98.3%, and specificity was 98.3%. These results were not consistent with **Pop-Trajković-Dinić *et al.* [(19)]** who found the accuracy of hysteroscopy in diagnosis of subendometrial myoma was 5.51%, with 100%, sensitivity, specificity 96%, also disagreed with **Tandulwadkar *et al.* [(18)]** who found that the accuracy was 66%, with sensitivity 100%, and specificity 100%, and **Loiacono *et al.* [(21)]** who found that the sensitivity was100%,and specificity was 100%. This study revealed that the accuracy of hysteroscopy in diagnosis of endometrial hyperplasia was 81.4%, sensitivity was 14.0%, and specificity was 99.5%. These results disagreed with **Pop-Trajković-Dinić *et al.* [(19)]** who found that the accuracy of hysteroscopy in diagnosis of endometrial hyperplasia was 7.58%, sensitivity was 100%, and specificity was 98.5%. **Elfayomy *et al.* [(6)]** found that sensitivity was 56.5%, and specificity was 91.6%, and **Garuti *et al.* [(22)]** who found that the sensitivity was 61.6%,and specificity was 95.2%,.This study showed that the accuracy of hysteroscopy in diagnosis of endometrial carcinoma was 97.9%, sensitivity of hysteroscopy in diagnosis of endometrial carcinoma was (82.6%), and specificity was (99.5%). These results disagreed with **Tandulwadkar *et al.* [(18)],** in which the accuracy of

hysteroscopy was 11.66%, sensitivity was 87.5%, and specificity was 98.1%,

Our results also disagreed with **Elfayomy *et al.* [6]** who revealed that the accuracy was 13.3%, sensitivity was 50%, and specificity was 94.2%, and disagreed with **Taneja *et al.* [23]** the accuracy was 100%, sensitivity was 100, and specificity was (100%). on otherhand our results agreed with **Nieto *et al.* [24]** sensitivity 86% and a specificity 99%.

LIMITATION OF THE STUDY

One of the difficulties that we have faced, there was no single operator assigned to perform the whole study population.

CONCLUSIONS

Hysteroscopy is the fundamental tool for accurate identification of various endouterine diseases in women with PMB. Endometrial cancer was substantially correlated with BMI 30430±4 (kg/m^2) diabetes mellitus 51.1%, prior deliveries number from 0 to 6, and hypertension 19.4%. Postmenopausal bleeding was most frequently caused by endometrial polyp (48.1%), endometrial hyperplasia (30.8%), and endometrial atrophy (23.2%). The most sensitive approach for diagnosing endometrial diseases, taking histopathology as the gold standard for diagnosis, was hysteroscopy after connecting clinical diagnosis and diagnosis following research. The easiest, most reliable, and first-line gold standard approach for evaluating patients with PMB is hysteroscopy. Hysteroscopy is useful in lowering the number of hospital visits, admissions, and overall expenses in older individuals who are at high risk for any invasive operation like a hysterectomy.

RECOMMENDATIONS

It is preferable to use a single surgeon to operate on the entire study population. Proper registration and documentation for upcoming research.

Financial support and sponsorship: Nil.

Conflict of interest: Nil.

REFERENCES

1. **Munro M (2014):** Investigation of Women with Postmenopausal Uterine Bleeding: Clinical Practice Recommendations. Perm J., 18(1): 55–70.
2. **Tahir M, Bigrigg M, Browning J *et al.* (1999):** A randomised controlled trial comparing transvaginal ultrasound, outpatient hysteroscopy and endometrial biopsy with inpatient hysteroscopy and curettage. Br J Obstetric Gynaecol., 106: 1259-64.
3. **Giusa-Chiferi M, Goncalves W, Bacarat E *et al.* (1996):** Transvaginal ultrasound, uterine biopsy and hysteroscopy for postmenopausal bleeding. Int J Gynaecol Obstet., 55: 39- 44.
4. **Elliott J, Connor M, Lashen H *et al.* (2003):** The value of outpatient hysteroscopy in diagnosing endometrial pathology in postmenopausal women with and without hormone replacement therapy. Acta Obstet Gynecol Scand., 82(12):1112-9.
5. **Kong A, Johnson N, Kitchener H *et al.* (2012):** Adjuvant radiotherapy for stage I endometrial Cancer. doi: 10.1093/jnci/djs374.
6. **Elfayomy A, Habib F, Alkabalawy M *et al.* (2012): Role of** hysteroscopy in the detection of endometrial pathologies in women presenting with postmenopausal bleeding and thickened endometrium. Arch Gynecol Obstet., 285: 839-43.
7. **Opmeer B, van Doorn H, Heintz A *et al.* (2007):** Improving the existing diagnostic strategy by accounting for characteristics of the women in the diagnostic work up for postmenopausal bleeding. Br J Obstetric Gynaecol., 114(1): 51-8.
8. **Sousa R, Silvestre M, Almeidae S *et al.* (2001):** ultrasonography and hysteroscopy in postmenopausal bleeding: a prospective study. Acta Obstet Gynecol Scand., 80(9): 856-62.
9. **Al-Kamil R (2001):** Clinical effectiveness of hysteroscopy in abnormal uterine bleeding. J Obstet Gynaecol., 21(6):614-6.
10. **Lalchandani S, Phillips K (2003):** Evaluation of endometrial cavity investigation option. Rev Gynecol Prac., 3: 165-70.
11. **Altman D (1991):** Practical Statistics for Medical Research, London: Chapman & Hall. https://www.routledge.com/Practical-Statistics-for-Medical-Research/Altman/p/book/ 9780412276309
12. **Pushpa D, Pooja M, Shweta T (2016):** Correlation of endometrial thickness with the histopathological pattern of endometrium in postmenopausal bleeding. J Obestet Gynecol. India, 66(1):42-46.
13. **Baggish M, Valle R, Guedj H (2007):** Hysteroscopy. Visual Perspective of Uterine Anatomy, Physiology and Pathology, 3rd ed. Lippincott Williams and Wilkins, Pp.204- 319. https://www.semanticscholar.org/paper/Hysteroscopy%3A-Visual-Perspectives-of-Uterine-and-Baggish-Guedj/9c90079c652fe79497e6be5ed52a69bc3ac64589
14. **Ribeiro C, Rosa-E-Silva J, Silva-de-S'a M *et al.* (2007):** Hysteroscopy as a standard procedure for assessing endometrial lesions among postmenopaual women. Sao Paulo Med J., 125:338-42.
15. **Pacheco J, Kempers R (1968):** Etiology of postmenopausal bleeding. Obstet Gynecol., 32:40-6.
16. **Bettocchi S, Ceci O, Nappi L (2004)**: Operative office hysteroscopy without anesthesia: Analysis of 4863 cases performed with mechanical instruments. J Am Assoc Gynecol Laparosc., 11: 59-61.
17. **Korkmazer E, Solak N, Ustunyurt E (2014):** Hysteroscopic assessment of postmenopausal endometrial thickening. Prz Menopauzalny, 13(6): 330-333.
18. **Tandulwadkar S, Deshmukh P, Lodha P *et al.* (2009):** Hysteroscopy in postmenopausal bleeding. J Gynecol Endosc Surg., 1 (2): 89-93.
19. **Pop-Trajković-Dinić S, Ljubić A, Kopitović V *et al.* (2013):** The role of hysteroscopy in diagnosis and treatment of postmenopausal bleeding. Vojnosanit Pregl., 70(8): 747–750.
20. **Dias D, Bueloni-Dias F, Dias R *et al.* (2015):** Usfulness of clinical, ultrasonographic, hysteroscopic, and immunohistochemical parameters in differentiating endometrial polyp from endometrial cancer. J Minim Invasive Gynecol., 12:296-302.
21. **Loiacono R, Trojano G, Del Gaudio N *et al.* (2015):** Hysteroscopy as a Valid Tool for Endometrial Pathology in Patients with Postmenopausal Bleeding or Asymptomatic Patients with a Thickened Endometrium: Hysteroscopic and Histological Results. Gynecol Obstet Invest., 79: 210-216.
22. **Garuti G, Cellani F, Garzia D *et al.* (2005):** Accuracy of hysteroscopic diagnosis of endometrial hyperplasia: a retrospective study of 232 patients. J Minim Invasive Gynecol., 12:247-253.
23. **Taneja B, Singh S, Ahlawat R *et al.* (2014):** Role of diagnostic hysteroscopy in abnormal uterine bleeding. Int J Reprod Contracept Obstet Gynecol., 3:544-51.
24. **Nieto P, Romero N, Jose E *et al.* (2017):** Correlation between hysteroscopic image andanatomopathological result in the diagnosis ofendometrial cancer in menopausal patients. EMAS., 100: 101. http://dx.doi.org/ 10.1016/j. maturitas.2017.03.201.