International Journal of Reproduction, Contraception, Obstetrics and Gynecology
Junnare KK et al. Int J Reprod Contracept Obstet Gynecol. 2019 Jan;8(1):159-164
www.ijrcog.org

pISSN 2320-1770 | eISSN 2320-1789

DOI: http://dx.doi.org/10.18203/2320-1770.ijrcog20185415

Original Research Article

Hysteroscopy: an effective tool in post-menopausal bleeding

K. K. Junnare*, G. J. Desai, G. S. Shekhawat

Department of Obstetrics and Gynecology, Smt. Kashibai Navle Medical College and General Hospital, Pune, Maharashtra, India

Received: 20 October 2018
Accepted: 13 December 2018

***Correspondence:**
Dr. K. K. Junnare,
E-mail: ketaki.junnare@yahoo.com

ABSTRACT

Background: Postmenopausal bleeding is a condition where endometrial carcinoma is to be ruled out. Traditionally, D and C is the preferred method for diagnosis in such condition. Other diagnostic modalities like trans vaginal ultrasonography (TVS) and hysteroscopy are being used for diagnosis in the cases of PMB. The objective of this study is to evaluate the efficacy and accuracy of TVS and hysteroscopy in women with postmenopausal bleeding (PMB).
Methods: One hundred postmenopausal women with vaginal bleeding underwent TVS and hysteroscopy. Endometrial tissue was obtained by curettage and sent for histopathology examination. The results of TVS and Hysteroscopy were compared against HP report.
Results: Hysteroscopy was successful in 98 patients. Endometrial histopathology revealed proliferative, secretory and atrophic endometrium in 26, 7 and 23 patients respectively. Polyp was diagnosed in 13 patients. Endometrial hyperplasia was detected in 11 patients and endometrial malignancy in 14 patients. All patients with endometrial hyperplasia and malignancy had ET (endometrial thickness) more than 4 mm, except one patient with endometrial malignancy who had 4 mm ET. The sensitivity and specificity of TVS for suspecting endometrial pathology at ET 4mm were 93% and 69.6%, respectively. Hysteroscopy had sensitivity of 95.2%, specificity of 92.8%, with diagnostic accuracy of 93.8%.
Conclusions: Hysteroscopy was found to be the more sensitive and specific than Transvaginal sonography for diagnosing endometrial pathologies. Hysteroscopy is safe and effective for detecting endometrial pathologies in patients with PMB.

Keywords: Endometrial malignancy, Hysteroscopy, Postmenopausal bleeding (PMB), Transvaginal ultrasonography (TVS)

INTRODUCTION

Postmenopausal bleeding (PMB) is defined as bleeding that occurs from the genital tract after one year of amenorrhoea, in a woman who is not receiving hormone replacement therapy (HRT).[1] Vaginal bleeding in post-menopausal women is an alarming symptom**.** A classic teaching has labelled postmenopausal bleeding as endometrial cancer until proven otherwise. It is estimated that postmenopausal women with vaginal bleeding have a probability of endometrial carcinoma of approximately 10%.[2] Dilatation and curettage (D and C) was the only option available in the past for evaluating a case of PMB. However focal lesions may be missed on D and C. With Hysteroscopy, entire uterine cavity can be examined, and biopsies can be taken from suspicious areas. However, the role of hysteroscopy in PMB is not very widely discussed in literature. Authors have evaluated women with PMB with TVS and hysteroscopy; and correlated them with endometrial histopathology.

The aim of this study is to evaluate the efficacy and accuracy of transvaginal ultrasound and hysteroscopy in women with postmenopausal bleeding; to compare the diagnostic accuracy of transvaginal ultrasound and hysteroscopy and to detect intracavitary abnormalities in women with postmenopausal bleeding.

METHODS

This was a prospective study conducted in Department of Obstetrics and Gynecology at Smt Kashibai Navle Medical College, Pune for 1 year (1 December 2014-30 November 2015). Number of cases were 100.

Inclusion criteria

- Postmenopausal women with complaint of per vaginal bleeding.

Exclusion criteria

- Diagnosed cases of endometrial cancer, cervical cancer
- Patients with vaginitis, cervicitis (patients included after treatment of infections)
- Patients not ready to give consent
- Patients who are not likely to follow up.

All postmenopausal women with PMB were included in the study after taking consent. Demographic data, detailed history of patients were noted. General and systemic examination was done. Bimanual examination was performed to assess the size, position, mobility of the uterus and any adnexal pathology. Transvaginal ultrasonography was done to assess uterus, cervix and adnexa. Endometrial thickness was measured for every case. Hysteroscopy was performed routinely in all patients under local anaesthesia with 4mm, 30 degree rigid telescope. Uterine cavity and cervical canal were explored with hysteroscope. Curettage was done, and endometrial tissue was sent for histopathological examination.

RESULTS

100 women with postmenopausal bleeding were enrolled in the study, attending gynaecology OPD. Most of the patients were under 50 yrs of age (45%).

Table 1: Age-wise distribution of study participants (n=100).

Age (years)	No. of patients	Percentage
< 50	45	45
51-60	42	42
61-70	10	10
>70	3	3
Total	100	100

The mean age 53.1 yrs. The youngest of the study group was 40 yrs and the oldest 80 yrs (Table 1).

Table 2: Distribution of study participants as per parity.

Parity	No. of patients	Percentage
Nulligravida	2	2
Para 1	6	6
Para 2	38	38
Para 3	27	27
Para 4	15	15
Para 5	7	7
Para 6	4	4
Para 10	1	1
Total	100	100

Of the total number of 100 women 38 % were para-2 followed by 27% para-3.27% were multiparous and 6% were para-1.2% patients were nulligravida. The highest parity in this study was para 10 (Table 2).

Table 3: Distribution of study participants as per transvaginal sonographic findings.

Endometrial thickness	No. of patients	Percentage
≤4 mm	32	32
> 4mm	68	68
Total	100	100

In the present study majority of patients i.e. 68% had endometrial thickness of more than 4mm. While, 32% had endometrial thickness of less than or equal to 4mm (Table 3).

Table 4: Distribution of study participants as per hysteroscopy features.

Features	No. of patients	Percentage
Normal	35	36
Atrophic	19	19
Hyperplastic	30	30
Endometrial polyp	13	13
Posterior wall growth	1	1
Total	98	100

Hysteroscopy revealed no endometrial abnormality in 35 patients while 19 had atrophic endometrium. Endometrial polyp was seen in 13 patients. 30 patients had features suggestive of hyperplastic endometrium (Table 4). In one patient hysteroscopy was not possible due to cervical stenosis whereas other patient's uterine cavity could not be visualised due to bleeding. On histopathological examination, normal endometrium was found in 56 patients. Out of them, 26 had proliferative phase, 7 had secretory phase and 23 had atrophic endometrium (Table 5). 13 patients had endometrial polyp. Simple endometrial hyperplasia without atypia was seen in 8 women; whereas 2 had complex hyperplasia without

atypia. One patient had complex endometrial hyperplasia with atypia, and 14 had malignancy (Table 5). In one patient histopathology sample could not be collected since dilatation was not possible due to cervical stenosis.

Table 5: Distribution of study participants as per histopathology findings.

Findings				Patients	Percentage
Normal	Proliferative			26	26
	Secretory			7	7
Atrophic				23	23
Disordered				4	4
Hormonal imbalance				1	1
Endometrial polyp				13	13
Hyperplasia		Simple	Without atypia	8	8
			With atypia	0	0
		Complex	Without atypia	2	2
			With atypia	1	1
Malignancy				14	14
Total				99	100

When ET was compared with histopathology reports, it was seen that none of the patient with endometrial hyperplasia had endometrial thickness less than 4mm (Table 6).

Table 6: Transvaginal endometrial thickness in study population with hyperplastic endometrial abnormality on HPE.

Endometrial abnormality	ET ≤4mm	ET >4mm
Simple endometrial hyperplasia without atypia	-	8
Simple endometrial hyperplasia with atypia	-	
Complex endometrial hyperplasia without atypia	-	2
Complex endometrial hyperplasia with atypia	-	1
Total		11

Table 7 shows that 14 patients with malignancy were detected. All patients with malignancy had endometrial thickness above 4mm except one patient whose endometrial thickness was 4mm. Most common hysteroscopy feature was hyperplastic endometrium followed by endometrial polyp.

The sensitivity of TVS in the present study for ET >4mm is 93% and the specificity of TVS for ET ≤4mm is 69.6% (Table 8). Positive predictive value of TVS was 70.1% and the negative predictive value was 92.8%. Diagnostic accuracy of TVS is 79.7%.

In this study, the sensitivity of hysteroscopy was 95.2% and the specificity was 92.8% (Table 9). Positive Predictive value of the hysteroscopy was 90.9 % and the negative predictive value was 96.3%. Diagnostic accuracy of Hysteroscopy was 93.8% (Table 9).

Table 7: Transvaginal sonography and hysteroscopy features in study participants with malignancy.

Carcinoma	TVS		Hysteroscopy features
	≤4mm	>4mm	
Adenosarcoma		+	Hyperplastic
Adenocarcinoma		+	Hyperplastic
Adenocarcinoma		+	Hyperplastic
Clear cell adenocarcinoma		+	Not possible
Papillary adenocarcinoma		+	Hyperplastic
Adenocarcinoma	+		Endometrial polyp
Papillary adenocarcinoma		+	Hyperplastic
Squamotransitional cell Ca of endometrium		+	Hyperplastic
Clear cell adenocarcinoma		+	Hyperplastic
Villo glandular variant of adenocarcinoma		+	Hyperplastic
Cervical villo glandular adenocarcinoma		+	Hyperplastic
Squamotransitional cell carcinoma of cervix		+	Hyperplastic
Adenocarcinoma		+	Hyperplastic
Clear cell adenocarcinoma		+	Hyperplastic

Table 8: Correlation between endometrial thickness on TVS and endometrial abnormality on HPE.

ET	Endometrial abnormality present	Endometrial abnormality absent	Total
>4mm	40 (TP)	17 (FP)	57
≤4mm	3 (FN)	39 (TN)	42
Total	43	56	99

- Sensitivity=TP/(TP+FN)* 100=93%
- Specificity =TN/(TN+FP)*100=69.6%
- Positive predictive value=TP/(TP+FP)*100=70.1%
- Negative predictive value=TN/(TN+FN)*100=92.8%

Table 9: Correlation between hysteroscopy features and endometrial abnormality on HPE.

Hysteroscopy	Endometrial abnormality present	Endometrial abnormality absent	Total
Abnormal	40	4	44
Normal	2	52	54
Total	42	56	98

- Sensitivity=TP/(TP+FN)*100=95.2%
- Specificity=TN/(TN+FP)*100=92.8%
- Positive predictive value=TP/(TP+FP)*100=90.9%
- Negative predictive value=TN/(TN+FN)*100=96.3%

DISCUSSION

Age of patients with postmenopausal bleeding in the current study ranged between 40 years and 80 years with a mean age of 53.15 years (Table 1). This age is much lower than the mean age 64 year by Kaur M et al and 63.6 year by Dawood NS et al.[3,4]

There is a trend towards investigating intracavitary uterine lesions only with postmenopausal bleeding when the endometrial thickness, as measured by ultrasound is >4mm.[5] Other authors have recommended systemic collection of biopsies from symptomatic patients regardless of endometrial thickness, because of reports of cancer in patients presenting ultrasound-measured endometrial thickness ≤5mm.[6,7]

68% of the patients in the present study had an endometrial thickness of >4mm (Table 4). The sensitivity and specificity of TVS for suspecting endometrial pathology at ET 4mm were 93% and 69.6%, respectively (Table 4). Transvaginal ultrasound has a sensitivity of 93% for detecting endometrial abnormality in present study. This is similar to two other studies 97% and 87% respectively, done by Timmermans A et al and Singh P et al (Table 10).[8,9] The study conducted by Wong et al had sensitivity of 94 % for cut off endometrial thickness of 4mm.[10] In all the three studies cut off ET was set as 4mm.

Table 10: Comparing sensitivity and specificity of TVS with other studies.

Study	N	Sensitivity	Specificity
Gull B et al[13]	339	100%	60%
Kaur M et al[3]	112	100%	73%
Timmermans A et al[8]	540	97%	56 %
Present study	100	93%	69.6%

Taipale et al concluded that the sensitivity of ultrasound to detect malignancy was 100 % and specificity was 44% if cut off of endometrial thickness was 6mm.[11] Karlsson B and Granberg S conducted a multicentric study to conclude that no malignant condition was thinner than 5mm and the risk of finding pathologic endometrium at curettage when the endometrium was less or equal to 4mm as measured by TVS was 5.5%. In present study, one case of endometrial carcinoma had endometrial thickness of 4mm.[12]

Gull B detected endometrial cancer in 18.7 % patients with an endometrial thickness more than or equal to 5mm.[13] Wong et al, conducted a retrospective cohort study on 4383 women to conclude that transvaginal ultrasound using a less than 3mm cut off 97% sensitivity for detecting endometrial cancer and can potentially avoid the need for endometrial sampling in nearly half of the women presenting with postmenopausal bleeding.[10] In the present study, out of 14 patients with endometrial carcinoma, 13 patients had ET >4mm, whereas one patient with clear cell carcinoma had ET=4mm.

In the present study, Hysteroscopy had sensitivity of 95.2%, specificity of 92.8 %, positive predictive value 90.9 % and negative predictive value of 96.3 %, with diagnostic accuracy of 93.8 % (Table 9). These statistical analysis results correlate with those of Garuti at al who demonstrated sensitivity of Hysteroscopy as 96.5%, specificity of 93.6%, and positive predictive value as 93.3% (Table 11).[14]

Table 11: Comparing sensitivity and specificity of hysteroscopy with other studies.

Study	No. of patients	Sensitivity	Specificity
Garuti et al[14]	419	96.5%	93.5%
Sousa R et al[15]	319	97.7%	92%
Tandulwadkar et al[16]	60	97%	98.5%
Tinelli et al[17]	752	98%	91%
Present study	100	95.2%	92.8%

In study by Sousa R et al, hysteroscopy findings were normal endometrium in two (2.9%), suggestive of atrophy in 22 (31.9%), benign focal abnormality in 34 (49.3%), suspicious focal abnormality in seven (10.1%), benign diffuse thickness in one (1.4%) and suspicious diffuse thickness in two (2.9%).

Purulent endometritis was found in one case (1.4%). In this study, endometrial polyp was seen in 13% which was removed by hysteroscopic polypectomy.[15]

Tandulwadkar et al concluded that the sensitivity of hysteroscopy in diagnosing endometrial hyperplasia and endometrial cancer was 93.75%. She inferred that hysteroscopy is much more sensitive than TVS in the detection of focal endometrial pathologies such as endometrial polyp 97% and 76.7%, respectively. The incidence of endometrial carcinoma was 13.33%, which is comparable to current study i.e. 14%.[16]

Tinelli et al, conducted a prospective study in 2008 on 752 postmenopausal women with abnormal uterine bleeding underwent TVS and outpatient hysteroscopy with eye directed biopsy. It was concluded that hysteroscopy gave more accurate diagnostic method for detection of endometrial pathology than TVS.[17]

Limitation of the study: the sample size was restricted to hundred patients. More data could have been generated with a bigger sample size.

CONCLUSION

Hysteroscopy was found to be the more sensitive (95% vs 93% of TVS) and specific (92.8% vs 70% of TVS) than transvaginal sonography for diagnosing endometrial pathologies, considering histopathology to be the gold standard for diagnosis. Diagnostic accuracy of hysteroscopy (93.8%) is better than Transvaginal sonography (79.7%) in detecting endometrial pathologies. All patients with postmenopausal bleeding need preliminary evaluation by TVS for ET. Women with ET less than 4mm can be followed up conservatively so as to prevent unnecessary surgical intervention. Hysteroscopy helps to detect intracavitary lesions like polyps which are responsible for PMB, which can be missed on TVS. Hysteroscopy can be considered as the simple, safe and effective investigation for the evaluation of the patients with PMB.

ACKNOWLEDGMENTS

Authors would like to acknowledge the faculty members working in the Department of Obstetrics and Gynaecology, SKN Medical College, for their support and help.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Brand AH. The woman with postmenopausal bleeding. Aus Fam Physic. 2007;36(3):116.
2. Smith-Bindman R, Kerlikowske K, Feldstein VA, Subak L, Scheidler J, Segal M, et al. Endovaginal ultrasound to exclude endometrial cancer and other endometrial abnormalities. JAMA. 1998;280(17):1510-7.
3. Kaur M, Singh R, Sharma M. Endovaginal sonographic evaluation of postmenopausal uterine bleeding. J Clin Diagn Res. 2010;4(2):2175-82.
4. Dawood NS, Peter K, Ibrar F, Dawood A. Postmenopausal bleeding: causes and risk of genital tract malignancy. J Ayub Med Coll Abbottabad. 2010;22(2):117-20.
5. Birinyi L, Daragó P, Török P, Csiszar P, Major T, Borsos A, et al. Predictive value of hysteroscopic examination in intrauterine abnormalities. Europ J Obstet Gynecol Reprod Biol. 2004;115(1):75-9.
6. Tabor A, Watt HC, Wald NJ. Endometrial thickness as a test for endometrial cancer in women with postmenopausal bleeding. Obstet Gynecol. 2002;99(4):663-70.
7. Litta P, Merlin F, Saccardi C, Pozzan C, Sacco G, Fracas M, et al. Role of hysteroscopy with endometrial biopsy to rule out endometrial cancer in postmenopausal women with abnormal uterine bleeding. Maturitas. 2005;50(2):117-23.
8. Timmermans A, Opmeer BC, Khan KS, Bachmann LM, Epstein E, Clark TJ, et al. Endometrial thickness measurement for detecting endometrial cancer in women with postmenopausal bleeding: a systematic review and meta-analysis. Obstet Gynaecol. 2010;116:160-7.
9. Singh P, Dwivedi P, Mendiratta S. Correlation of endometrial thickness with the histopathological pattern of endometrium in postmenopausal bleeding. J Obstet Gynecol India. 2016;66(1):42-6.
10. Wong AS-W, Lao TT-H, Cheung CW, Yeung SW, Fan HL, Ng PS, et al. Reappraisal of endometrial thickness for the detection of endometrial cancer in postmenopausal bleeding: a retrospective cohort study. BJOG. 2016;123:439-46.
11. Taipale P, Tarjanne H, Heinonen UM. The diagnostic value of transvaginal sonography in the diagnosis of endometrial malignancy in women with peri-and postmenopausal bleeding. Acta Obstet Gynecol Scand. 1994;73(10):819-23.
12. Karlsson B, Granberg S, Wikland M, Ylöstalo P, Torvid K, Marsal K, et al. Transvaginal ultrasonography of the endometrium in women with postmenopausal bleeding-a Nordic multicenter study. Am J Obstet Gynecol. 1995;172(5):1488-94.
13. Gull B, Carlsson S, Karlsson B, Yleostalo P, Milsom I, Granberg S. Transvaginal ultrasonography of the endometrium in women with postmenopausal bleeding: is it always necessary to perform an endometrial biopsy? Am J Obstet Gynaecol. 2000;182:509-15.
14. Garuti G, Sambruni I, Cellani F, Garzia D, Alleva P, Luerti M. Hysteroscopy and transvaginal ultrasonography in postmenopausal women with

uterine bleeding. Int J Gynecol Obstet. 1999;65(1):25-33.
15. Sousa R, Silvestre M, Sousa LA, Falcão F, Dias I, Silva T, et al. Transvaginal ultrasonography and hysteroscopy in postmenopausal bleeding a prospective study. Acta Obstet Gynecol Scand. 2001;80(9):856-62.
16. Tandulwadkar S, Deshmukh P, Lodha P, Agarwal B. Hysteroscopy in postmenopausal bleeding. J Gynecol Endosc Surg. 2009;1(2):89-93.
17. Tinelli R, Tinelli FG, Cicinelli E, Malvasi A, Tinelli A. The role of hysteroscopy with eye-directed biopsy in postmenopausal women with uterine bleeding and endometrial atrophy. Menop. 2008;15(4):737-42.

Cite this article as: Junnare KK, Desai GJ, Shekhawat GS. Hysteroscopy: an effective tool in post-menopausal bleeding. Int J Reprod Contracept Obstet Gynecol 2019;8:159-64.