

# Correlation of Endometrial Thickness by Transvaginal Sonography with Histopathological Examination in Abnormal Uterine Bleeding in Perimenopausal Age Group

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## ABSTRACT

**Background:** Transvaginal sonography and endometrial biopsy are the two diagnostic tests, most frequently used to investigate the cause of abnormal uterine bleeding. The aim of this study is to correlate the findings between transvaginal sonography and histopathology for diagnostic evaluation in perimenopausal women with abnormal uterine bleeding.

**Methods:** A descriptive observational study was carried out at Paropakar Maternity and Women's Hospital, Thapathali, Kathmandu, Nepal during the period of one year (1st January 2019 to 30th December 2019) in 70 perimenopausal women with abnormal uterine bleeding. Transvaginal sonography was done and endometrial thickness was noted. Endometrial biopsy was done under intravenous anaesthesia. Histopathological reports reviewed and analysis done.

**Results:** The most common age group of women presenting with abnormal uterine bleeding was 40 to 43 years (42.9%) and the commonest clinical feature was menorrhagia (50%) followed by metrorrhagia (27.1%). The transvaginal sonography showed that majority of women had endometrial thickness of 10-12mm (35.7%) followed by 7-9mm (27.1%). Proliferative endometrium (37.1%) was most common histopathological finding followed by secretory endometrium (30%). 10 cases of proliferative endometrium was seen at ET 7-9mm and 1 case of endometrial carcinoma was seen at ET 13-15 mm with P-value <0.13.

**Conclusions:** Transvaginal sonography and histopathological examination are the standard diagnostic procedures for the assessment of abnormal uterine bleeding and for early detection of precancerous lesion like endometrial hyperplasia and endometrial cancer.

**Keywords:** Abnormal uterine bleeding; histopathology; transvaginal sonography

## INTRODUCTION

Perimenopause is defined as the period beginning with menopausal transition and ending 12 months after the last menstrual period.<sup>1</sup> Abnormal uterine bleeding (AUB) is any variation in normal menstrual cycle and includes changes in regularity and frequency of menses, duration of blood flow and amount of blood loss.<sup>2</sup> It occurs in various forms such as menorrhagia, metrorrhagia, metrometrorrhagia, oligomenorrhoea, polymenorrhoea.<sup>3</sup> It refers to the symptoms of excessive, prolonged, acyclic bleeding regardless of diagnosis or cause.<sup>4</sup> The criteria for normal menstruation comprises of 21-35 days cycle with 2-7 days flow and 30-80ml of total blood loss in a single menstrual cycle. Thus, the bleeding other than this is considered as abnormal uterine bleeding.<sup>5</sup>

Transvaginal sonography (TVS) is a non-invasive procedure, has the ability to place the high frequency transducer nearer to the region of interest, permits better visualization of genital organs.<sup>6</sup> Histopathological examination (HPE) by endometrial biopsy is the gold standard diagnostic tool in evaluation of AUB.<sup>7</sup>

## METHODS

This is a descriptive observational study conducted at Paropakar Maternity and Women's Hospital, Thapathali, Kathmandu, Nepal from 1st January 2019 to 30th December 2019. Inclusion criteria included all women with AUB in perimenopausal age (40-50 years) with all parity and TVS finding of endometrial thickness  $\geq$  4 mm. Women with uterine fibroids, known genital malignancy, hemostatic disorder, under hormonal therapy and those

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who don't give consent were excluded from the study.

All patients included in this study were informed about the study and its objectives. Written informed consent was taken. Privacy and confidentiality was maintained. Data collection was started after getting letter of permission from Institutional research board of National Academy of Medical Sciences, Paropakar Maternity and Women's Hospital and respective unit chief.

Detailed history and examination was done in all cases. All the recruited patients were subjected to TVS and findings were noted. An endometrial biopsy was done and HPE of endometrial tissue was sent. Sequentially the results of histopathology obtained.

The analysis was done in terms of age distributions, type of AUB, TVS findings, HPE findings, correlation of TVS and HPE. All data were analyzed manually and with the help of SPSS 16 and comparison of variables was done.

## RESULTS

In this study, 70 women presented with perimenopausal bleeding were taken into study. Endometrial thickness was taken by TVS and HPE were correlated. Majority of the women were between 40 to 43 years (42.9%) with a mean age  $44.41 \pm 3.4$ . Least common age group was between 48 to 50 years (27.1%) (Table 1).

**Table 1. Distribution according to age group.**

Age group (years)	Frequency	Percentage(%)
40-43	30	42.9
44-47	21	30.0
48-50	19	27.1
Total	70	100.0

Menorrhagia (50%) was the commonest presenting symptom followed by menometrorrhagia (27.1%) (Table 2). Majority of the patients had endometrial thickness between 10-12mm (35.7%) and 1 patient had endometrial thickness >16mm (Table 3).

**Table 2. Distribution according to menstrual symptoms.**

Menstrual symptoms	Frequency	Percentage(%)
Menorrhagia	35	50
Menometrorrhagia	19	27.1
Polymenorrhea	7	10
Metrorrhagia	4	5.7
Polymenorrhagia	3	4.3
Oligomenorrhea	2	2.9
Total	70	100

**Table 3. Distribution according to endometrial thickness.**

Endometrial thickness (mm)	Frequency	Percentage(%)
4-6	16	22.9
7-9	19	27.1
10-12	25	35.7
13-15	9	12.9
16 or more	1	1.4
Total	70	100

The most common histopathological finding was proliferative endometrium which was seen in 26 women (37.1%) followed by secretory endometrium (30%) and disordered proliferation (20%). 1 case of endometrial carcinoma was found (1.4%) (Table 4).

**Table 4. Distribution according to histopathological findings.**

Histopathological findings	Frequency	Percentage (%)
Proliferative endometrium	26	37.1
Secretory endometrium	21	30
Disordered proliferation	14	20
Simple hyperplasia without atypia	3	4.3
Simple hyperplasia with atypia	1	1.4
Complex hyperplasia without atypia	1	1.4
Complex hyperplasia with atypia	1	1.4
Atrophic endometrium	0	0
Endometrial carcinoma	1	1.4
Tissue inadequate for diagnosis	2	2.9
Total	70	100

Majority of women had no any co-morbidity. In this study, the correlation of TVS and HPE findings showed that among 70 women, 10 women had Proliferative endometrium at 7-9mm, 8 cases of disordered proliferation was seen at endometrial thickness 10-12mm, both simple and complex hyperplasia with atypia was seen at endometrial thickness 13-15mm in 1 case each, 3 cases of simple hyperplasia without atypia and 1 case of complex hyperplasia without atypia was seen at endometrial thickness 10-12mm. A case of adenocarcinoma was seen at endometrial thickness 13-15 mm with P-value < 0.13 (Table 5).

**Table 5. Correlation of endometrial thickness and histopathological findings.**

Histopathological findings	4-6mm	7-9mm	10-12mm	13-15mm	>16mm	Total
Proliferative endometrium	6	10	9	1	1	27
Secretory endometrium	7	6	4	2	0	19
Disordered proliferation	2	2	8	1	0	13
Simple hyperplasia without atypia	0	0	3	1	0	4
Simple hyperplasia with atypia	0	0	0	1	0	1
Complex hyperplasia without atypia	0	0	1	1	0	2
Complex hyperplasia with atypia	0	0	0	1	0	1
Atrophic endometrium	0	0	0	0	0	0
Endometrial carcinoma	0	0	0	1	0	1
Tissue inadequate for diagnosis	1	1	0	0	0	2
<b>Total</b>	<b>16</b>	<b>19</b>	<b>25</b>	<b>9</b>	<b>1</b>	<b>70</b>

## DISCUSSION

Abnormal Uterine Bleeding (AUB) is defined as the bleeding pattern that differs in frequency, duration and amount from a pattern observed during normal menstrual cycle or after menopause.<sup>2</sup> It occurs in various forms such as menorrhagia, metrorrhagia, menometrorrhagia, oligomenorrhoea, polymenorrhoea.<sup>3</sup> It refers to the symptoms of excessive, prolonged, unexpected or acyclic bleeding regardless of diagnosis or cause.<sup>4</sup> AUB is the most common complaint of any age seeking gynaecological health care. Transvaginal sonography and endometrial biopsy are the two diagnostic tests most frequently used to investigate the cause of bleeding.

In our study, majority of women with AUB were between age group 40 to 43 years (42.9%) but the most common age group presenting with AUB was 48-51 years in the study done by Pillai SS, Das BP et al, Verma A et al.<sup>1-</sup>

<sup>11</sup> However, similar age group(40-43 years) was involved in the study done by Shobhitha GL, Desmukh V et al, Shobha Rani MS et al.<sup>2-8</sup> Least common age group was 48-50 years (27.1%). The reason for the increased incidence of abnormal uterine bleeding in this age group (40 to 50 years) may be because of the fact that these patients were in their climacteric period. As women approach menopause, cycles shorten and often become intermittently anovulatory due to the decline in the number of ovarian follicles and estradiol level.

In our study, the most common presentation in women with AUB was menorrhagia (50%), Menometrorrhagia(27.1%), polymenorrhoea (10%), metrorrhagia (5.7%), oligomenorrhoea(2.9%). Similar incidence of presenting complaints were found in the study conducted by Mune SB, Verma A et al, Bhosle A et al, Sharma M et al.<sup>7-17</sup> The similar finding in this study may be due to similar socio-economic status, environment and race. In contrast, one study conducted by Bhatta S et al<sup>18</sup> showed metrorrhagia as the commonest clinical presentation (38.52%). This could be due to only the women of perimenopausal age group are included in this study and sample size of this study is only 70 which is less as compared to this study.

In this study, the TVS findings showed that majority of the patient had endometrial thickness of 10-12 mm(35.7%) followed by 7-9 mm(27.1%), 4-6mm (22.9%) and >16mm(1.4%). In contrast to this study, majority of the women had endometrial thickness >16mm in the study done by Verma A et al.<sup>11</sup>

In our study, Proliferative endometrium (37.1%) was most common histopathological finding followed by secretory endometrium (30%), disordered proliferation(20%), simple hyperplasia without atypia(4.3%), simple hyperplasia with atypia(1.4%), complex hyperplasia without atypia(1.4%), complex hyperplasia with atypia(1.4%), endometrial carcinoma(1.4%). Similar to our study, proliferative endometrium was most common histopathological finding in the study done by Pillai SS, shobha Rani MS et al, Somnath G et al.<sup>1-10</sup> In contrast to this study, the most common HPE finding was endometrial hyperplasia (45.45%) in the study done by Shobhitha GL, Takreem A et al, Supriya M et al.<sup>2-14</sup> In our study endometrial carcinoma was seen in 1 case(1.4%) which was also seen in study done by shobhitha GL, Sreelakshami U et al.<sup>2-12</sup> The possible explanation for decreased incidence of endometrial hyperplasia could be due to low socioeconomic status, decrease occurrence of risk factors like obesity, diabetes and sedentary lifestyle. Identification of endometrial hyperplasia is important because they are thought to be a precursor of endometrial carcinoma.

In this study, the correlation of TVS and HPE, 10 cases had proliferative endometrium at endometrial thickness 7-9mm and a case of endometrial carcinoma was seen at 13-15mm which is similar to the study done by Shobhitha GL et al<sup>2</sup>. In this study, 8 cases had disordered proliferation at 10-12mm which is in contrast to the study done by Das BP et al<sup>3</sup>. 7 cases had secretory endometrium at 1-6mm which is in contrast to the study done by Das BP et al, Deshmukh V et al.<sup>3-6</sup> Both simple and complex hyperplasia with atypia was seen in 1 case

each at 13-15mm, 3 cases of simple hyperplasia without atypia and 1 case of complex hyperplasia without atypia was seen at 10-12mm which is in contrast to the study done by Das BP et al, Singh M et al.<sup>3-19</sup> In contrast to this study, most of the cases had proliferative endometrium at endometrial thickness 11-15mm in a study done by Singh M et al.<sup>19</sup> The reason behind the difference in study is that this study had been carried out in small group of patients for a short period of time. So, the chance of missing the case is high.

## CONCLUSIONS

This study confirms that transvaginal sonography and histopathological examination has a definitive role in evaluating patients with abnormal uterine bleeding in perimenopausal age group. Transvaginal sonography is regarded as first line diagnostic tool for assessing uterine pathology in perimenopausal age women presenting with AUB. Endometrial biopsy is a simple day care procedure for histological evaluation of the endometrium and remains the standard diagnostic procedure for the assessment of abnormal uterine bleeding and for early detection of precancerous lesions like endometrial hyperplasia and endometrial carcinoma. Thus, Transvaginal sonography with endometrial biopsy remains the gold standard for assessment of the uterine cavity especially in patients with abnormal uterine bleeding.

## CONFLICT OF INTEREST

The authors declare no conflict of interest

## REFERENCES

1. Pillai SS. Sonographic and histopathological correlation and evaluation of endometrium in perimenopausal women with abnormal uterine bleeding. *Int J Reprod Contracept Obstet Gynecol.* 2014;3(1):113-117. [\[Download PDF\]](#)
2. Shobhitha GL, Kumari VI, Priya PL, Sundari BT. Endometrial study by TVS and It's correlation with histopathology in abnormal uterine bleeding. *J Dental Med Sci.* 2015;14(4):21-32. [\[Google Scholar\]](#)
3. Das BP, Deka N, Saikia J. Evaluation of Endometrium with Sonographic and Histopathological Correlation in Perimenopausal Women with Dysfunctional uterine bleeding. *International Journal of Science and Research (IJSR).* 2017;6(10):2319-7064. [\[Google Scholar\]](#)
4. Najeeb R, Awan AS, Bakhtiar U, Akhter S. Role of TVS in assessment of abnormal uterine bleeding in perimenopausal age group. *J Ayub Med Coll Abbottabad.* 2010; 22(1):87-90. [\[Article\]](#)
5. Hoffman BL, Schorge J, Bradshaw K, Holvorson L, Schaffer J, Corton M. Abnormal uterine bleeding. *Williams Gynaecology.* 3<sup>rd</sup> edition. New York: Mcgraw hill education. 2016:180-198. [\[Article\]](#)
6. Deshmukh V, Yelikar KA, Davile M. Clinical Study Of Endometrial Pattern in Dysfunctional Uterine Bleeding by Transvaginal Sonography and It's Histopathological Correlation. *Journal of Evolution of Medical and Dental Sciences.* 2013;2(15):2440-2446. [\[Download PDF\]](#)
7. Mune SB, Karche AG. Histopathological patterns of endometrial lesions in patients with abnormal uterine Bleeding in rural area of Western Maharashtra. *Indian Journal of Pathology and Oncology.* 2016;3(4):665-672. [\[Download PDF\]](#)
8. Shobha Rani MS, Mallika M. Histopathological study of Peimenopausal abnormal uterine bleeding, *Sch. Acad. J. Biosci.* 2016;4(1):33-37.
9. Niazi M, Kamal M. Transabdominal Vs Transvaginal Sonography-Comparison in Pelvic Pathologies. *Journal of Rawalpindi Medical College.* 2015;19(3):223-226. [\[Article\]](#)
10. Somnath G, Naskar A. Clinicopathologic study of endometrial histopathology in perimenopausal women with abnormal uterine bleeding. *American International Journal of Research in Formal, Applied & Natural Sciences.* 2016;15(1):48-52. [\[Article\]](#)
11. Verma A, Dubey P, Tripathi PS. Evaluation of endometrium in perimenopausal women with abnormal uterine bleeding by transvaginal sonography. *Indian Journal of Applied Research.* 2019;9(11):22-23.
12. Shreelaxmi U, Bindu VT, Subhashini T. Abnormal uterine bleeding in perimenopausal age group women: A study on clinicopathological evaluation and management. *Int J Reprod Contracept Obstet Gynecol.* 2018;7(1):192-197. [10.18203/2320-1770.ijrcog20175844](#)
13. Nair L, Christopher U. A retrospective analysis of causes, diagnosis and management of AUB in perimenopausal women. *Indian J Med Res Pharm Sci.* 2015;2(7):52-54. [\[Download PDF\]](#)
14. Supriya M, Begum A. Abnormal uterine bleeding: role of sonography and histopathology in endometrial study with emphasis on the organic causes. *Indian Journal of Pathology and Oncology.* 2018;5(2):262-268. [\[Download PDF\]](#)
15. Nazim F, Hayat Z, Hannan A, Ikram U, Nazim K. Role of transvaginal ultrasound in identifying endometrial hyperplasia. *Journal of Ayub Medical College Abbottabad.* 2013;25(1-2):100-102. [\[Article\]](#)
16. Bhosle A, Fonseca M. Evaluation and histopathological correlation of abnormal uterine bleeding in perimenopausal

- 
- women. *Bombay Hospital Journal*. 2010;52(1):69-72. [\[Google Scholar\]](#)
17. Sharma M, Khajuria R. Histopathological evaluation of endometrial curettings in perimenopausal women presenting with abnormal uterine bleeding (AUB). *J.Evid. Based Med. Healthc*. 2018;5(11):940-942. [\[Google Scholar\]](#)
18. Bhatta S, Sinha AK. Histopathological study of endometrium in abnormal uterine bleeding. *Journal of Pathology of Nepal*. 2012;2(4):297-300. [\[Google Scholar\]](#)
19. Singh M, Sachan R, Yadav A. Significance of endometrial thickness on transvaginal sonography in heavy menstrual bleeding. *J Curr Res Sci Med*. 2019;5(1):28-32. [\[Article\]](#)