

## Evaluation of Endometrium by Histopathology and Its Correlation with Endometrial Thickness by Trans Vaginal Ultrasound in Abnormal Uterine Bleeding in Perimenopausal Women

Dr. Sherin Samsudeen\*, M.B.B.S, M.D (OG)<sup>1</sup>, Dr. N. Saravana Kumar, M.B.B.S, M.D (OG)<sup>2</sup>

<sup>1</sup>Assistant Professor, Department of Obstetrics and Gynecology, Annapoorana Medical College and Hospital, Salem - Kochi Highway, Kombadipatty, Salem, Tamil Nadu 636308, India

<sup>2</sup>Professor, Department of Obstetrics and Gynecology, Annapoorana Medical College and Hospital, Salem - Kochi Highway, Kombadipatty, Salem, Tamil Nadu 636308, India

\*Corresponding author: Dr. Sherin Samsudeen

| Received: 11.03.2019 | Accepted: 20.03.2019 | Published: 30.03.2019

DOI: [10.36348/sijog.2019.v02i03.005](https://doi.org/10.36348/sijog.2019.v02i03.005)

### Abstract

Any uterine bleeding outside the normal volume, duration, regularity or frequency is considered Abnormal uterine bleeding (AUB). AUB is the most common and distressing gynaecological complaint of women attending gynaecological consultation. It is used to classify AUB on the basis of etiology - Polyp, Adenomyosis, Leiomyoma, Malignancy, Coagulopathy, Hyperplasia, Ovulatory dysfunction, Endometrial, Iatrogenic and Not yet classified. Primary disorders of the endometrium are common causes of AUB in both perimenopausal and postmenopausal women. The histopathology pattern of endometrium include proliferative pattern, secretory pattern, simple hyperplasia, complex hyperplasia, atrophic endometrium and disordered proliferation. Endometrial carcinoma is one of the common cause of postmenopausal bleeding. The endometrium is evaluated by Trans Vaginal ultrasound (TVS), Hysteroscopy and endometrial biopsy. Endometrial sample is obtained by fractional curettage and office endometrial biopsy using Pipelles' aspirator. The present study is designed to evaluate the endometrial pattern on histopathology and to correlate the endometrial thickness by Transvaginal Ultrasound and endometrial pattern in perimenopausal women with AUB. This is a retrospective study conducted in Annapoorana Medical College and Hospital, Salem from December 2016 to November 2018. Women presenting with Abnormal uterine bleeding who underwent Endometrial sampling and Trans Vaginal Ultrasound as initial part of management is taken for the study. Endometrial sampling was obtained either by fractional curettage or office endometrial biopsy in our institution. Endometrial thickness was obtained by transvaginal ultrasound using 7.5 MHz transvaginal transducer before obtaining endometrial sampling. Observations were made and the results were analysed to find the correlation between endometrial thickness and study the endometrial pattern.

**Keywords:** Abnormal uterine bleeding, Trans vaginal ultrasound, endometrial thickness, endometrial biopsy, endometrial pattern, endometrial hyperplasia.

**Copyright © 2019:** This is an open-access article distributed under the terms of the Creative Commons Attribution license which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use (Non-Commercial, or CC-BY-NC) provided the original author and source are credited.

### INTRODUCTION

Any uterine bleeding outside the normal volume, duration, regularity or frequency is considered Abnormal uterine bleeding (AUB). AUB is the most common and distressing gynaecological complaint of women attending gynaecological consultation [1]. It is used to classify AUB on the basis of etiology - Polyp, Adenomyosis, Leiomyoma, Malignancy, Coagulopathy, Hyperplasia, Ovulatory dysfunction, Endometrial, Iatrogenic and Not yet classified [2]. Primary disorders of the endometrium are common causes of AUB in both perimenopausal and postmenopausal women. The histopathology pattern of endometrium include proliferative pattern, secretory pattern, simple hyperplasia, complex hyperplasia, atrophic

endometrium and disordered proliferation. Endometrial carcinoma is one of the common cause of postmenopausal bleeding. Endometrial sample is obtained by fractional curettage and office endometrial biopsy using Pipelles' aspirator. TVS is a non invasive primary modality of investigation to study the endometrial thickness. Endometrial biopsy is a simple invasive procedure to study the endometrial pattern in AUB. The other modalities to evaluate endometrium are hysteroscopy and saline infusion sonography. Endometrial carcinoma occurs in 10% of cases of AUB in perimenopausal and postmenopausal age group. Trans Vaginal Ultrasound (TVS) and endometrial biopsy should be done as an initial step in evaluation of perimenopausal bleeding. The present study is designed to evaluate the endometrial pattern on histopathology

and to correlate the endometrial thickness by Transvaginal Ultrasound and endometrial pattern in perimenopausal women with AUB. In a study of AUB in perimenopausal women by Bharti *et al.*, 4.3% had proliferative endometrium, 78.26% had simple hyperplasia without atypia, 13.04% had complex hyperplasia without atypia [3]. According to Bhosle *et al.*, 66.1% had proliferative endometrium, 16.1% had secretory endometrium, 17.8% simple hyperplasia without atypia [4]. According to the study by Cornitescu, 8.6% had secretory endometrium, 1.2% had simple hyperplasia without atypia, 1.6% had complex hyperplasia with atypia, 75% had atrophic endometrium and 1.95% had disordered proliferation [5]. Kairavi Desai *et al.*, study had proliferative endometrium in 27% cases, secretory endometrium in 23% cases, simple hyperplasia in 34% cases, complex hyperplasia in 35% cases and disordered proliferation in 6% cases in perimenopausal age group [6]. In Anjali *et al.*, study mean endometrial thickness by TVS was 3.72mm in AUB cases. On histopathology normal endometrium was present in 60% cases, endometrial hyperplasia in 28% cases [7].

According to Kauram *et al.*, with a cut off value of 4 mm for endometrial thickness, TVS showed a sensitivity of 100% and specificity of 73.33% with postmenopausal bleeding [8]. Ilan Bruchim *et al.*, study with 5 mm endometrial thickness had highest sensitivity 100% and lower specificity 33% for normal endometrium [9].

Hence women with AUB should have Trans Vaginal Ultrasound (TVS) and endometrial biopsy done as an initial step in evaluation of perimenopausal bleeding.

#### AIMS AND OBJECTIVES

- To study the endometrial pattern on histopathology in cases of abnormal uterine bleeding in perimenopausal women.
- Correlation of Endometrial thickness by Transvaginal Ultrasound and endometrial pattern on histopathology in perimenopausal women.

#### MATERIALS AND METHODS

This is a retrospective study conducted in Annapoorana Medical College and Hospital, Salem from December 2016 to November 2018. Women presenting with abnormal uterine bleeding who underwent endometrial sampling and Trans Vaginal Ultrasound to evaluate the endometrial pathology is taken for the study. Endometrial sampling was obtained either by fractional curettage or office endometrial biopsy in our institution. Endometrial thickness was obtained by transvaginal ultrasound using 7.5 MHz transvaginal transducer before obtaining endometrial sampling.

#### INCLUSION CRITERIA

Women of age more than 40 years with AUB before menopause who had undergone endometrial biopsy and Transvaginal Ultrasound.

#### EXCLUSION CRITERIA

- Women with-
- Coagulation Disorders.
  - Active Genital Tract Infection.
  - Pregnancy Complications.
  - Hormone Therapy in Last Six Months.

Clinical data of the patients is collected from Gynaecology OPD and ward, operation notes, patient case sheets and histopathology reports. Data is classified based on Age, parity, menstrual irregularities, endometrial thickness on TVS and Histopathology of the endometrium.

#### RESULTS AND DISCUSSION

Our study included 140 women with perimenopausal abnormal uterine bleeding. Of 140 women 59% had menorrhagia. Menorrhagia was seen in 18%, polymenorrhoea in 11%, polymenorrhagia in 10% and prolonged heavy menstrual bleeding in 2% of cases (Table-1). Bhosle *et al.*, study showed similar results with menorrhagia (53.3%) as predominant symptom followed polymenorrhagia (53.3%) and menorrhagia (18.7%).

**Table-1: Classification of cases based on menstrual pattern**

Menstrual pattern	No. of cases	Percentage
Menorrhagia	83	59
Menorrhagia	24	18
Polymenorrhoea	16	11
Polymenorrhagia	14	10
Prolonged heavy bleeding	3	02
Total	140	100

62.8% of cases fall in the age group of 40-44 years, followed by 34.2% of cases in 45-49 years and 3% cases in 50-54 years age group (Table-2). Indrani *et al.*, study also had higher prevalence of AUB in age group 40-45 years (55.5%) and 41.66% cases in 45-49 years of age [10].

**Table-2: Distribution of cases according to age**

Age (years)	No of cases	Percentage
40-44	88	62.8
45-49	48	34.2
50-54	04	03
Total	140	100

In our study 52.6% cases had endometrial thickness of 8-15 mm, 30% had 4-8 mm, 16% had >15 mm and 1.4% had less than 4 mm (Table-3). Varsha Deshmukh *et al.*, study showed 65% of patients had

endometrial thickness between 5-9.9 mm, 22% had ET between 10-14.9 mm, 3% had endometrial thickness between 15-19.9 mm, 4% had ET between 20-24.9 mm, 4% had endometrial thickness between 20-24.9 mm and 2% between 30-34mm. Mean endometrial thickness in proliferative phase was 6.9 mm and in secretory phase was 12.3 mm. Out of 65 patients with endometrial thickness between 5-9.9 mm, on USG 55 patients were having proliferative pattern which represents an anovulatory type of DUB. 39 patients had endometrial thickness equal to or less than 5.2 mm and USG findings like thin, broken, irregular echogenic surface and thus were labeled as having menstrual phase. However, 7 patients with endometrial thickness between 5-9.9 mm had USG findings of increased echogenicity due to hypertrophied and tortuous glands and thus were diagnosed as having secretory phase [11].

**Table-3: Distribution of cases according to endometrial thickness by Trans vaginal ultrasound**

Thickness of endometrium	No.of cases	Percentage
Less than 4 mm	2	1.4
4-8 mm	42	30
8-15 mm	74	52.6
>15 mm	22	16
Total	140	100

Our study results based on the histopathology 23% had proliferative type, 13% had secretory pattern, 58% had endometrial hyperplasia and 3% had atrophic endometrium. Endometrial cancer was seen in 3% cases. Endometrial hyperplasia was the commonest histopathological pattern (58%) observed (Table-4).

**Table-4: Different types of histopathology of endometrium**

Type of endometrium	No of cases	Percentage
Proliferative endometrium	32	23
Secretory endometrium	18	13
Endometrial hyperplasia	82	58
Atrophic endometrium	04	3
Endometrial cancer	04	3
Total	140	100

**Table-6: Correlation of endometrial pattern with endometrial thickness of 4-8 mm**

HISTOPATHOLOGY OF ENDOMETRIUM	No of cases	Percentage
Proliferative Endometrium	30	71.40
Secretory Endometrium	06	14.30
Endometrial Hyperplasia	04	9.50
Atrophic endometrium	02	4.80
Total	42	100

**Table-7: Correlation of endometrial pattern with endometrial thickness of 8-15 mm**

HISTOPATHOLOGY OF ENDOMETRIUM	No.of cases	Percentage
Proliferative Endometrium	02	2.7
Secretory Endometrium	12	8.57
Endometrial Hyperplasia	56	75
Atrophic endometrium	04	6
Total	74	100

Majority of the cases of endometrial hyperplasia had simple endometrial hyperplasia (71.9%). Complex hyperplasia was seen in 23.1% of cases and 5% had atypical hyperplasia (Table-5). This is comparable with Bharti *et al.*, [3] study which showed 78.26% of simple hyperplasia and 13.04% proliferative endometrium. Indrani *et al.*, study showed 72% of endometrial hyperplasia, 21.6% complex hyperplasia and 2% cancer endometrium [10]. Baral R *et al.*, [12] reported a similar incidence. In contrast Farquhar CM *et al.*, [13] showed endometrial hyperplasia only in 4.33% cases, The reason probably being that they considered only the reproductive age group whereas our study includes, reproductive age with largely perimenopausal age groups.

**Table-5: Classification of cases according to endometrial hyperplasia**

Types of endometrial hyperplasia	No of cases	Percentage
Simple hyperplasia	59	71.9
Complex hyperplasia	19	23.1
Atypical hyperplasia	04	05
	82	100

Majority of the cases with endometrial thickness of 4-8 mm had proliferative endometrium (71.4%), 14.3% had secretory endometrium, 9.5% had endometrial hyperplasia and 4.8% had atrophic endometrium (Table-6). Majority of the cases with endometrial thickness of 8-15 mm had endometrial hyperplasia (75%), 8.57% had secretory endometrium, 6% had atrophic endometrium and 2.7% had proliferative endometrium. All cases with endometrial thickness of more than 15 mm showed endometrial hyperplasia (Table-9). Thulasi *et al.*, study showed 35 patients (46.66%) with an endometrial thickness between 8-10 mm and 15 patients (20%) had an endometrial thickness between 10-15 mm [14]. In Shobita *et al.*, study 56% had endometrial hyperplasia with a endometrial thickness of 15mm and above and 68% proliferative endometrium at a endometrial thickness of 4-8mm [15].

**Table-8: Correlation of endometrial pattern with endometrial thickness of 15 mm above**

HISTOPATHOLOGY OF ENDOMETRIUM	No.of cases	Percentage
Proliferative Endometrium	0	0
Secretory Endometrium	0	0
Endometrial Hyperplasia	22	100
Atrophic endometrium	0	0
Total	22	100

**Table-9: Comparing endometrial thickness by transvaginal sonography with endometrial histopathology**

Endometrial thickness(mm)	No.of cases	Proliferative endometrium	Secretory endometrium	Endometrial hyperplasia	Atrophic endometrium	Endometrial cancer
<4 mm	2	0	0	0	2	0
4-8 mm	42	30	6	4	2	0
8-15 mm	74	2	12	56	0	4
15 and above	22	0	0	22	0	0
Total	140	32	18	82	4	4

There is a substantial agreement (kappa statistics-0.72) between endometrial thickness 4-8 mm with proliferative endometrium. TVS showed a high sensitivity of 93.75% and negative predictive value of 97.05%. The sensitivity is 48.2% only while determining the endometrial hyperplasia at a endometrial thickness of 8-15 mm and specificity is 69%. There is poor agreement (kappa statistic 0.19) between both studies. TVS endometrial thickness of 15 mm and above showed moderate agreement (kappa statistic-0.44) with endometrial hyperplasia. Endometrial thickness more than 15 mm showed 100% specificity and 100% positive predictive value for endometrial hyperplasia. It showed concordance level of 57.14% between both. With endometrial thickness of more than 8mm the sensitivity of TVS in detecting endometrial hyperplasia is 95.12% and negative predictive value is 90.9%. Both tests showed concordance level of 80.0%. TVS endometrial thickness between 8-15 mm showed 100% sensitivity and 100% negative predictive value when compared with dilatation and curettage. Both tests showed slight agreement and a concordance level of 50%. None of the case had endometrial cancer at a endometrial thickness of less than 8mm. Ivan *et al.*, showed ET of 5mm or more had a sensitivity and negative predictive value of 100 % in predicting malignancy [16]. Chapavati *et al.*, showed at a cut off of ET 8mm, the sensitivity was 83.9%, specificity of 58.8%, negative predictive value 90.4% for abnormal endometrium on histopathology [17].

## CONCLUSION

As AUB is the most common gynaecological complaint of women presenting in perimenopausal women, every care taker should be competent and precise in evaluating and treating the cases. Being D&C a traditional older method in studying the endometrial pattern in perimenopausal women, newer modalities like Pipelles endometrial aspiration, Trans vaginal ultrasound is promising in evaluation of AUB. As no abnormal pathology is detected in cases of endometrial

thickness below 8 mm endometrial aspiration for endometrial biopsy can be considered if endometrial thickness is more than 8 mm in perimenopausal women. In present study there is 80% substantial correlation between endometrial thickness by TVS and histopathological reports. The endometrial thickness measured by TVS has its own limitations due to inter observer variation. Hence the operator need to get good expertise in measuring endometrial thickness by TVS. Present study concludes that transvaginal ultrasound may be suggested as the initial investigation in perimenopausal women presenting with symptoms of AUB.

## REFERENCES

- Gimpelson, R. J., & Rappold, H. O. (1988). A comparative study between panoramic hysteroscopy with directed biopsies and dilatation and curettage: a review of 276 cases. *American journal of obstetrics and gynecology*, 158(3), 489-492.
- Munro, M. G., Critchley, H. O., Broder, M. S., & Fraser, I. S. (2011). FIGO classification system (PALM-COEIN) for causes of abnormal uterine bleeding in nonpregnant women of reproductive age. *International Journal of Gynecology & Obstetrics*, 113(1), 3-13.
- Bharti, B., & Satish, R. P. (2008). Feasibility and yield of endometrial biopsy using suction curette device for evaluation of abnormal pre and postmenopausal bleeding. *J Obstet Gynecol India*, 58(4), 322-326.
- Bhosle, A., & Fonseca, M. (2010). Evaluation and histopathological correlation of abnormal uterine bleeding in perimenopausal women. *Bombay Hospital Journal*, 52(1), 69-72.
- Cornitescu, F. I., Tanase, F., Simionescu, C., & Iliescu, D. (2011). Clinical, histopathological and therapeutic considerations in non-neoplastic abnormal uterine bleeding in menopause transition. *Rom J Morphol Embryol*, 52(3), 759-765.

6. Desai, K., Patole, K., & Kathaley, M. (2014). Endometrial evaluation by histopathology in abnormal uterine bleeding in perimenopausal and postmenopausal patients. *MVP Journal of Medical Sciences*, 1(2), 75-79.
7. Anjali, S., Saroj, S., Veena, M., & Kalpana, S. (2001). TVS in DUB and its correlation with histopathology. *Journal of Obstetrics and Gynecology of India*, 51(6): 116-116.
8. Kaurm. (2010). Total of 112 patients observed from 2006 to 2008 with AUB with a cut off value of 4 mm for ET, TVS showed a sensitivity of 100%, Specificity of 73.33%, PPV of 76.47%, NPV of 100% with postmenopausal bleeding.
9. Bruchim, I., Biron-Shental, T., Altaras, M. M., Fishman, A., Beyth, Y., Tepper, R., & Aviram, R. (2004). Combination of endometrial thickness and time since menopause in predicting endometrial cancer in women with postmenopausal bleeding. *Journal of Clinical Ultrasound*, 32(5), 219-224.
10. Mukhopadhyay, I., Rao, P. S. (2017). An analysis of endometrial bleeding patterns in perimenopausal women. *International Journal of Reproduction Contraception Obstetrics and Gynecology*, 6(7):2776-2783.
11. Deshmukh, V., Yelikar, K. A., & Davile, M. (2013). Clinical study of endometrial pattern in dysfunctional uterine bleeding by Transvaginal Sonography and its Histopathological correlation. *Journal of Evolution of Medical and Dental Sciences*, 2(15), 2440-2446.
12. Baral, R., & Pudasaini, S. (2011). Histopathological pattern of endometrial samples in abnormal uterine bleeding. *Journal of Pathology of Nepal*, 1(1), 13-16.
13. Farquhar, C. M., Lethaby, A., Sowter, M., Verry, J., & Baranyai, J. (1999). An evaluation of risk factors for endometrial hyperplasia in premenopausal women with abnormal menstrual bleeding. *American journal of obstetrics and gynecology*, 181(3), 525-529.
14. Thulasi, P., Balakrishnan, R., & Shanthi, M. (2018). Correlation of endometrial thickness by Trans-Vaginal Sonography [TVS] and histopathology in women with abnormal perimenopausal and postmenopausal bleeding-A prospective study. *Indian Journal of Obstetrics and Gynecology Research*, 5(1), 44-48.
15. Shobhitha, G. L., Kumari, V. I., Priya, P. L., & Sundari, B. T. (2015). Endometrial study by TVS and Its correlation with histopathology in abnormal uterine bleeding. *J Dental Med Sci*, 14(4), 21-32.
16. Fistic, I., Hodek, B., Klaric, P., Jokanovic, L., Grubisic, G., & Ivicic-Bakulic, T. (1997). Transvaginal sonographic assessment of premalignant and malignant changes in the endometrium in postmenopausal bleeding. *Journal of clinical ultrasound*, 25(8), 431-435.
17. Chapati, G. (2007). They studied 110 women with abnormal uterine bleeding. They concluded that with an endometrial thickness cut off of 8 mm showed sensitivity of 83.9 %, Specificity of 58.8 %, NPV 90.4% for abnormal endometrium on histopathology.