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Original Research Article

Sonographic and histopathological findings of endometrium among perimenopausal women with abnormal uterine bleeding- A cross sectional study in north Kerala

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ABSTRACT

Background: AUB makes a perimenopausal woman to seek medical care. This study evaluated and correlated the endometrial thickness obtained by ultrasonography and histopathological findings of endometrium in perimenopausal women with AUB.
Materials and Methods: A hospital based observational cross-sectional study was conducted in Obstetrics and Gynaecology Department, Baby Memorial Hospital, Calicut for a period of 18 months. Histopathologic evaluation of endometrial tissue was done and was correlated with endometrial thickness.
Results: The average age of women enrolled was 47.88 years with standard deviation of 3.729. The average endometrial thickness was 12.40mm. Endometrial hyperplasia without atypia was the leading histopathological finding obtained after analysis of endometrium (21.5%). This study shows that there is a significant relationship between histopathology findings of endometrium and age of participant and between endometrial thickness and menorrhagia. There was no relationship between histopathology findings and endometrial thickness.
Conclusions: Perimenopausal AUB should be evaluated in a systematic manner, so that endometrial hyperplasia, carcinoma endometrium could be diagnosed in a very early stage and prompt treatment be given at right time reducing morbidity improving the quality of life.

1. Introduction

The perimenopausal period begins with the irregularity of the menstrual cycle and lasts up to 1 year after permanent stoppage of menses.[1] STRAW.[2] Stages of Reproductive Aging Workshop defines 'perimenopause' as the period beginning with menopausal transition and ending 12 months after the last menstrual period and in the late 40s to early 50s. Gradual decrease in the ovarian follicle recruitment is the rule with fall in the estradiol levels and anovulatory cycles are frequent with prolonged cycles of amenorrhoea alternating with heavy menstrual bleeding as complaints.[3] Variable bleeding patterns are classic of anovulatory cycles. Abnormal uterine bleeding (AUB) is the frequent complaint in the gynecology outpatient department, especially in perimenopausal age group[4] affecting the quality of the life. Abnormal uterine bleeding (AUB) is defined as any bleeding from the genital tract that is a deviation from normal in frequency, cyclicity, duration or quantity. Heavy menstrual bleeding is the most common presentation of AUB.[5] NICE guidelines put forward AUB - heavy

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menstrual bleeding as excessive menstrual blood loss which interferes with the woman's physical, emotional, social and material quality of life, either alone or in combination with other symptoms[6] In the perimenopausal age group, it may be the only clinical sign of endometrial malignancy[7] and that proper evaluation helps to identify the cause of bleeding.[8]

Diagnosis of abnormal uterine bleeding begins with a thorough history including detailed menstrual history and physical examination followed by appropriate laboratory and imaging tests. According to FOGSI[9] management guidelines of abnormal uterine bleeding in reproductive age group ultrasonography should be done to evaluate uterus, adnexa and endometrial thickness. Transvaginal ultrasonography (TVS) is a non-invasive procedure and can be used as a screening tool. TVS allows visualizing the endomyometrial interface and the entire cavity. Evaluation of endometrial thickness by ultrasonogram is significant in diagnosing benign and neoplastic endometrial lesions in women in all the age groups.[10]

Symptomatic women with thick endometrium by ultrasonography (Trans Vaginal Sonography) warrants endometrial sampling .Endometrial assessment is performed to diagnose malignancy or pre-malignant conditions and to evaluate the hormonal influences of the endometrium. It is important to evaluate the endometrial histopathology in a woman who has no improvement in her bleeding pattern following a course of medical therapy of three months.[11] Dilatation and curettage (D&C) has been the mainstay in endometrial sampling over decades. This study aims to evaluate findings in the histopathological sample in women with perimenopausal AUB and also correlation of the same with the sonographic endometrial thickness.

2. Aim and Objective

To evaluate and correlate the endometrial thickness obtained by ultrasonography and histopathological findings of endometrium in women of perimenopausal age group, presenting with abnormal uterine bleeding.

3. Materials and Methods

3.1. Study site

Baby Memorial Hospital, Calicut.

3.2. Inclusion criteria

Patients attending gynecology out -patient department of age group 41 to 55 with abnormal uterine bleeding.

3.3. Exclusion criteria

Critically ill, patients on hormone therapy and patients with bleeding diathesis ,thyroid diseases

3.4. Study design

Cross sectional observational study.

3.5. Study period

18 months.

3.6. Sample size

Sample size was calculated using the formula

$n = \frac{(Z\alpha+Z\beta)^2 pq*2}{d^2}$

$Z\alpha$ is the Z value at an alpha error

$Z\beta$ is the Z value at a beta error

d is the Minimum clinically relevant effect size

$Z\alpha$ is 1.96 for an alpha error of 5% for a 2 sided test, $Z\beta$ is 0.84 for a beta error of 20%.

As per study conducted by Shobha S Pillai[7] the prevalance with either proliferative or secretory change is 45.5%. To detect a difference of 25% change in this character between those with a endometrial thickness of <10 versus >10 the sample size required as per the above formula was

$n = \frac{(1.96+0.84)^2 45.5*54.5*2}{25*25} = 62+62 = 124$

3.7. Method

This study was a hospital based observational cross-sectional study conducted in Obstetrics and Gynecology , Department, Baby Memorial Hospital, Calicut. About 125 women of age group between 41 to 55 satisfying the inclusion and exclusion criteria were enrolled in the study.

Informed consent was taken and details such as age, parity, presenting complaints, menstrual history were documented with physical and systemic examination. Baseline investigations such as blood grouping/Rh typing, complete blood picture, Random blood sugar, and pelvic Ultrasonography (Transvaginal) were done. Endometrial tissue collected by Dilatation and curettage (D&C) was sent for histopathologic evaluation. The management of perimenopausal bleeding depended upon the histopathological report. Fisher's Exact test is used as the test of significance for data interpretation. The results were considered statistically significant when the p value is <0.05.

4. Result

Table 1: Distribution of age

Age (Years)	Frequency	Percent
40 – 45	33	25.4%
46 - 50	64	49.2%
51 - 55	33	25.4%

In this study, the average age was 47.88 years with standard deviation 3.729. The minimum and maximum age

was 40 and 55 years respectively.

Table 2: Distribution of menstrual complaint

Menstrual Complaint	Frequency	Percent
Menorrhagia	107	82.3%
Irregular Cycles	10	7.7%
Polymenorrhoea	9	6.9%
Dysmenorrhoea	3	2.3%
Intermenstrual Bleeding	3	2.3%
Menometrorrhagia	1	0.8%
Oligomenorrhoea	1	0.8%

Menorrhagia is the chief complaint.(82.3%)

Table 3: Distribution of parity

Parity	Frequency	Percent
Nullipara	1	0.8%
1 - 2	92	70.8%
> 2	37	28.5%

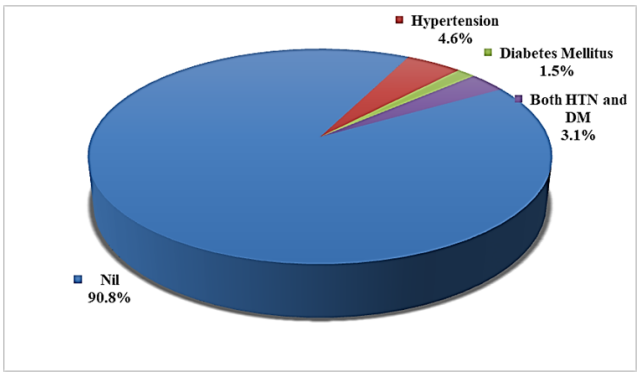

Figure 1: Distributon of medical illness

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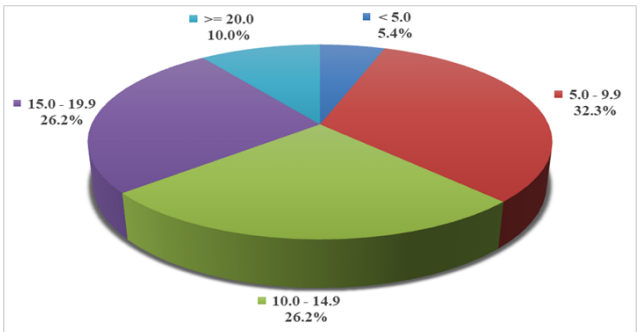

Figure 2: Distribution of endometrial thickness

Here the p-value is less than the significance level 0.05; the relationship between histopathology findings and age is significant.

Here the p-value (0.326) is greater than the significance level 0.05; the relationship between histopathology findings and endometrial thickness is not significant.

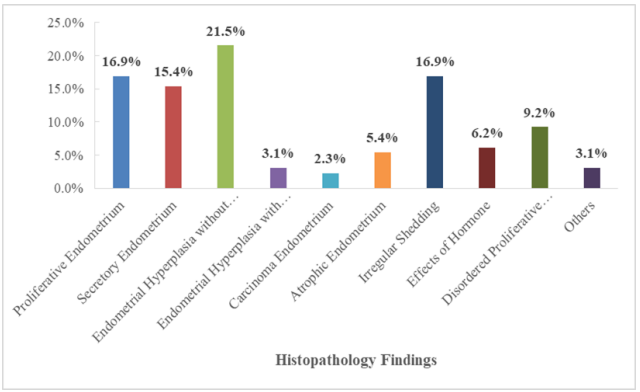

Figure 3: Distribution of histopathology findings

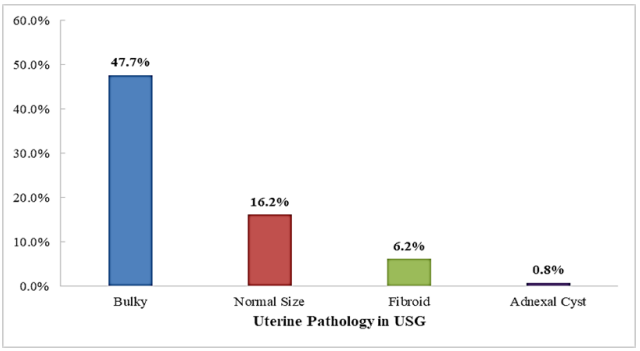

Figure 4: Distribution of uterine pathology in USG

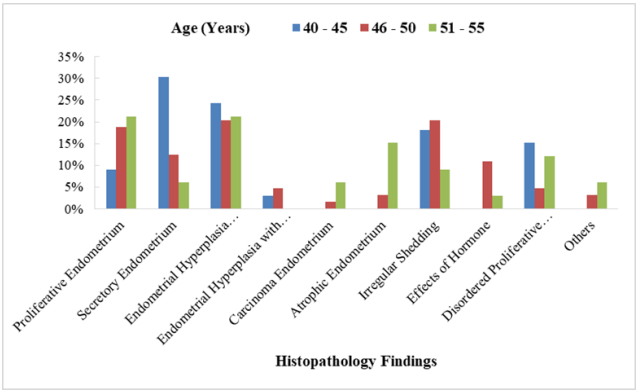

Figure 5: Relationship between histopathology findings and age

5. Discussion

AGE: In this study, the average age was 47.88 years with standard deviation 3.729. The minimum and maximum age was 40 and 55 respectively. Shobha S Pillai[7] had 40% of the patients aged from 48 to 51 while Bharat Talukdar[12] women with age between 40 and 45 years constituted the bulk. In a study by Sreelakshmi U,[5] the mean age was 46.68. In Prasanna Byna study,[13] 67.69% of women

Table 4: Relationship between endometrial thickness and age

Endometrial Thickness (mm)	Age (Years) 40 - 45(n = 33)	46 - 50(n = 64)	51 - 55(n = 33)	p - value
< 5.0	4 (12.1%)	0 (0.0%)	3 (9.1%)	
5.0 - 9.9	7 (21.2%)	26 (40.6%)	9 (27.3%)	
10.0 - 14.9	9 (27.3%)	16 (25.0%)	9 (27.3%)	0.105
15.0 - 19.9	10 (30.3%)	15 (23.4%)	9 (27.3%)	
>= 20.0	3 (9.1%)	7 (10.9%)	3 (9.1%)	

Table 5: Relationship between endometrial thickness and menstrual complaint

Endometrial Thickness (mm)	Menstrual Complaint Menorrhagia(n = 107)	Irregular Cycles(n = 10)	Polymenorrhoea(n = 9)
< 5.0	6 (5.6%)	1 (10.0%)	0 (0.0%)
5.0 - 9.9	39 (36.4%)	1 (10.0%)	1 (11.1%)
10.0 - 14.9	22 (20.6%)	5 (50.0%)	5 (55.6%)
15.0 - 19.9	30 (28.0%)	1 (10.0%)	2 (22.2%)
>= 20.0	10 (9.3%)	2 (20.0%)	1 (11.1%)

Menorrhagia : Here, the relationship between endometrial thickness and menorrhagia is significant.
Irregular Cycles and Polymenorrhoea: As the p- value is >0.05; the relationship between endometrial thickness and irregular cycles was not significant.

Table 6: Relationship between histopathology findings and menstrual complaint

Histopathology Findings	Menstrual Complaint Menorrhagia(n = 107)	Irregular Cycles(n = 10)	Polymenorrhoea(n = 9)
Proliferative Endometrium	19 (17.8%)	4 (40.0%)	0 (0.0%)
Secretory Endometrium	18 (16.8%)	0 (0.0%)	2 (22.2%)
Endometrial Hyperplasia without Atypia	24 (22.4%)	0 (0.0%)	2 (22.2%)
Endometrial Hyperplasia with Atypia	2 (1.9%)	0 (0.0%)	2 (22.2%)
Carcinoma Endometrium	2 (1.9%)	1 (10.0%)	0 (0.0%)
Atrophic Endometrium	6 (5.6%)	1 (10.0%)	0 (0.0%)
Irregular Shedding	15 (14.0%)	2 (20.0%)	3 (33.3%)
Effects of Hormone	6 (5.6%)	1 (10.0%)	0 (0.0%)
Disordered Proliferative Endometrium	12 (11.2%)	0 (0.0%)	0 (0.0%)
Others	3 (2.8%)	1 (10.0%)	0 (0.0%)

Menorrhagia: The p-value (0.229) is greater than the significance level 0.05; the relationship between histopathology findings and menorrhagia was not significant.
Irregular Cycles: The p-value (0.064) is greater than the significance level 0.05; the relationship between histopathology findings and irregular cycles was not significant.
Polymenorrhoea: The p-value (0.092) is greater than the significance level 0.05; the relationship between histopathology findings and polymenorrhoea was not significant.

were in age group of 40 to 45 years. In an observational study by Jyoti Jaiswal[14]and Senthil[15] women aged 40-45 and 44.89.+/- 2.93 respectively were participants, and we observed lesser mean age than other similar study and no significant correlation between age and endometrial thickness measured by ultrasonography was noted.

5.1. Presenting complaint

Menorrhagia (82.3%), followed by polymenorrhoea (6.9%) and irregular cycles (7.7%) were the chief complaints as in Sreelakshmi U[5] et al. (83. 7% of cases). Shobha S Pillai[7] noted that menorrhagia was the presenting problem in 46.6% as in Bharat Talukdar[12] (43.69%) and Thulasi et al study[16] (40%). Arif A Faruqui[17] had menorrhagia (16.06%) was the chief complaint followed by menometrorrhagia. Jyoti Jaiswal,[14] Sendhil coumary,[15] Rupali Modak[18] endorsed the same findings.

Parity 70.8% of patients participated in this study were para 2 or less. It is comparable with study conducted by Shobha S Pillai,[7] in which 70.5% were para 2. Prassanna Byna,[13] study by Sendhil coumary,[15] Sreelakshmi U[5] had bulk of patients with para 2 or less in coherence with Bharat Talukdar[12] (69.71%) Jyoti Jaiswal[14] had most of the patient with parity more than 2.

Table 7: Relationship between histopathology findings and endometrial thickness

Histopathology Findings	Endometrial Thickness (mm)				
	< 5.0(n = 7)	5.0 - 9.9(n = 42)	10.0 - 14.9(n = 34)	15.0 - 19.9(n = 34)	>= 20.0(n = 13)
Proliferative Endometrium	0 (0%)	11 (26%)	7 (21%)	2 (6%)	2 (15%)
Secretory Endometrium	1 (14%)	9 (21%)	5 (15%)	3 (9%)	2 (15%)
Endometrial Hyperplasia without Atypia	1 (14%)	4 (10%)	5 (15%)	12 (35%)	6 (46%)
Endometrial Hyperplasia with Atypia	0 (0%)	1 (2%)	1 (3%)	2 (6%)	0 (0%)
Carcinoma Endometrium	0 (0%)	1 (2%)	1 (3%)	1 (3%)	0 (0%)
Atrophic Endometrium	1 (14%)	3 (7%)	1 (3%)	2 (6%)	0 (0%)
Irregular Shedding	1 (14%)	7 (17%)	7 (21%)	5 (15%)	2 (15%)
Effects of Hormone	0 (0%)	3 (7%)	3 (9%)	1 (3%)	1 (8%)
Disordered Proliferative Endometrium	2 (29%)	3 (7%)	2 (6%)	5 (15%)	0 (0%)
Others	1 (14%)	0 (0%)	2 (6%)	1 (3%)	0 (0%)

5.2. Family history

In this study, only 2.3% of the participants have significant family history of endometrial carcinoma.

5.3. Medical illness

In the present study, majority (90.8%) of the cases do not have any other comorbidities. 4.6% of the total participants have systemic hypertension and 1.5% of cases have diabetes mellitus as comorbidity. Sreelakshmi. U[5] opined that 40.35% of cases had increased BMI and 26.3% of patients have systemic hypertension.

5.4. USG finding

Bulky uterus was the sonological finding in 47.7% of women, while 6.2% of them were leiomyoma. Shobha S Pilllai[7] in her similar research had more than half of the patients with fibroid uterus as in Bharat Talukdar[12](45.63%).

5.5. Endometrial thickness

Ultrasonographic examination revealed 42 out of 130 patients (32.3%) of this study, have an endometrial thickness between 5 to 9.9mm. 33 out of 130 patients (25.3%) of cases have endometrial thickness between 15 and 19.9mm. The minimum and maximum endometrial thickness was 4 and 31mm respectively. So in this study, the average endometrial thickness was 12.4 mm with a standard deviation 5.730. The relationship between endometrial thickness and menorrhagia is significant in this study, since the p value is greater than significance level 0.05. In a study by Shobha S Pillai,[7] 41 out of 88 patients, have endometrial thickness between 5 and 9.9 mm, accounting for 46.6% of cases, which is also observed in our study. This study, similar to previous studies shows that the relationship between histopathology findings and endometrial thickness is not significant.

Ashwini H Pai[19] in her observation had 60.3% of women with endometrial thickness (ET) between 10mm and 20mm and 25.7% with ET less than 10mm. Jyoti et al.[14] had 45% of AUB cases with an endometrial thickness between 6 to 9mm as in Thulasi et al[16] (46.66%) and in our research. In a study by Sendhil[15] most patients have ET between 9 and 12mm.

5.6. Histopathological findings

Here, the histopathological evaluation of endometrial curettings revealed that majority of cases (21.5%) had endometrial hyperplasia without atypia. Followed by equal distribution (16.9%) of proliferative endometrium and irregular shedding of endometrium. Carcinoma endometrium was the finding in 3 out of 130 subjects (2.3%). Most common histopathological finding in Sreelakshmi U[5] was proliferative endometrium- 30.3%, followed by secretory endometrium (27.4%). In Ashwini H Pai study,[19] most common histopathology finding was simple hyperplasia without atypia, 56.6% which was comparable with the present study. In Shobha S Pillai study,[7] 27.2% had proliferative endometrium, followed by disordered proliferative endometrium (22.7%) as in Akanksha Wankhade[20] and Rupali Modak.[18] Similar to present study, in Thulasi et al.,[16] histopathological evaluation of endometrium revealed endometrial hyperplasia, 40%.

5.7. Relationship between histopathology and age

From the present study, there is significant relation between histopathological study of endometrium and age of the participant. Endometrial hyperplasia is seen mostly in participants whose age is between 46 to 50. Atrophic endometrium is seen in patients between 51 to 55 years. 3 participants in this study had carcinoma endometrium, of

which 2 belong to age group 51 to 55 years. In this study, most of the participants belong to the age group between 46 to 50 with a mean age of 47.88 years.

6. Conclusion

This study was conducted at Baby memorial hospital, Kerala to evaluate the sonographic and histopathological findings of endometrium among perimenopausal women with AUB. On the basis of this study we concluded that menorrhagia is the chief complaint of perimenopausal patients presenting to Gynaecology OPD. Most of them are para 2 or less. Endometrial hyperplasia without atypia was the most common histo-pathological observation. Significant relationship between endometrial thickness and menorrhagia was observed with equal significance between histopathology and the age. Thickness of endometrium had no association its histopathology.

7. Limitation

This study was conducted in the peak of Covid 19 infection period, so only women with serious episode of bleeding came to us. For complete assesment this study had to be carried out in regular non covid times This study included only 130 patients. The outcome of the study would have been better if large number of people were included.

8. Recommendations

Perimenopausal AUB should be evaluated in a systematic manner, so that any case of abnormalities such as endometrial hyperplasia, carcinoma endometrium can be diagnosed in a very early stage and prompt treatment can be given at right time so as to reduce the disease morbidity and improve the quality of life.

9. Author Contribution

Dr Ranjana B prepared the protocol, collected data, assessed eligibility and methodological quality of studies and wrote the review. Dr Rabiyabi V and Dr Neena Mampilly conceived the idea, conducted searches, Dr Rejeesh assessed eligibility and quality of studies. Dr Lisha performed the statistical analysis and Dr Heera Shenoy T supervised the review.

The ethical approval for the research was provided by the following institution, Baby Memorial Hospital according to the principles of Helsinki Declaration.

10. Sources of Funding

None.

11. Conflict of Interest

None.

References

1. Munro MG, Critchley HO, Broder MS, Fraser IS. FIGO Working Group on Menstrual Disorders. FIGO classification system (PALM-COEIN) for causes of abnormal uterine bleeding in nongravid women of reproductive age. *Int J Gynaecol Obstet*. 2011;113(1):3–13.
2. Soules MR, Sherman S, Parrot E. Stages of reproductive aging workshop(STRAW). *J Womens Health, Gender Based Med*. 2001;10:843–8.
3. Kotdawala P, Kotdawala S, Nagar N. Evaluation of endometrium in peri-menopausal abnormal uterine bleeding. *J Midlife Health*. 2013;4(1):16–21.
4. Mahajan N, Aggarwal M, Bagga A. Health issues of menopausal women in North India. *J Midlife Health*. 2012;3(2):84–7.
5. Sreelakshmi 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;7:192–7.
6. Heavy menstrual bleeding: assessment and management. London: NICE; 2018. Available from: https://www.nice.org.uk/guidance/ng88.
7. 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):113–7.
8. Goldstein SR, Lumsden MA. Abnormal uterine bleeding in perimenopause. *Climacteric*. 2017;20(5):414–20.
9. Management Guidelines of Abnormal Uterine Bleeding in Reproductive Period. Available from: http://fogsi.org/good-clinical-practice-guidelines-on-aub/2016.
10. Ryszard B, Rzepka-Górska I. "[Transvaginal ultrasonography in the diagnosis of endometrial and uterine cavity changes in perimenopausal women. *Ginekol Pol*. 2002;73(11):985–90.
11. Najeeb R, Awan AS, Akhter S. Role of transvaginal sonography in assessment of abnormal uterine bleeding in perimenopausal age group. *J Ayub Med Coll Abbottabad*. 2010;22(1):87–90.
12. Talukdar B, Mahela S. Abnormal uterine bleeding in perimenopausal women: Correlation with sonographic findings and histopathological examination of hysterectomy specimens. *J Midlife Health*. 2016;7(2):73–7.
13. Byna P, Siddula S, Kolli S, Shalik MV. Histopathological correlation of abnormal uterine bleeding in perimenopausal women. *Int J Biomed Advanced Res*. 2015;4(8):509–13.
14. Jaiswal J, Jaiswal A. A Study on Relationship of Endometrial Thickness and Abnormal Uterine Bleeding in Perimenopausal Women. *J SAFOMS*. 2018;6(2):106–11.
15. Coumary AS, Ishwarya LD, Bhavani D, Samal S, Rani R. A clinical study on abnormal uterine bleeding in premenopausal women. *Int J Clin Obstet Gynaecology*. 2020;4(3):125–9.
16. Thulasi P, Balakrishnan R, Shanthi M. Correlation of endometrial thickness by Trans-Vaginal Sonography [TVS] and histopathology in women with abnormal peri-menopausal and postmenopausal bleeding-A prospective study. *Indian J Obstet Gynecol Res*. 2018;5(1):44–8.
17. Faruqui AA. Abnormal Uterine Bleeding: A Doctor Centric Survey on Prevalence, Management and Limitations in Indian Context. *Obstet Gynecol Res*. 2019;2(3):59–66.
18. Modak R, Pal A, Pal A, Bose K. Abnormal uterine bleeding in perimenopausal women: sonographic and histopathological correlation and evaluation of uterine endometrium. *Int J Reprod Contrac Obstet Gynecol*. 2020;9(5):1959–65.
19. Pai AH, Kondapani S. Abnormal Uterine Bleeding in Perimenopausal Women:Relevance of Transvaginal Ultrasound, Office Endometrial Biopsy ,Dilataion and Curettage- An Observational Study. *Int J Infertil Fetal Med*. 2018;9(1&2):10–3.
20. Wankhade A, Vagha S, Shukla S, Bhake A, Laishram S, Agrawal D, et al. To correlate histopathological changes and transvaginal sonography findings in the endometrium of patients with abnormal uterine bleeding. *J Datta Meghe Inst Med Sci Univ*. 2019;14:11–5.

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