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## **A Comparative study of endometrial thickness by transvaginal ultrasound and histopathological examination in perimenopausal women in a teaching medical college hospital**

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### **Abstract**

AUB in a perimenopausal women is when there is a substantial change in frequency, duration or the amount of bleeding, when there is bleeding in between periods, or when there is bleeding after 12 months of cessation of menses. This was a retrospective study done on patients of perimenopausal age group (40-52 years) who presented with AUB to the department of obstetrics and gynaecology in a medical teaching college hospital. Of the 64 women considered, majority i.e., 37.6% had uterine fibroid while 32.8% had endometrial hyperplasia. 15.7 % ( 10 cases) had a bulky uterus, of which, 10% (1 case) wasn't associated with any other uterine abnormalities. 23.4% of the women had no detectable sonological abnormalities. Here, we observed that of the 17 women who had hyperplasia without atypia, three women had an endometrial thickness of  $\leq 5$ , the exact values of endometrial thickness being 3.6mm, 4.3mm and 4.8mm and their ages 43, 42 and 45 respectively; 4 women had ET between 6 and 10.9mm; 4 women had ET between 11 and 15.9mm and 6 women had ET greater than 16mm. One woman had hyperplasia with atypia. She was a postmenopausal women, 45 years of age with an ET of 12.5mm. Two women had cystic atrophy, their ET being 4.3mm and 18mm their ages being 42 and 52 respectively.

**Keywords:** Endometrial thickness, Transvaginal ultrasound, Histopathological examination

### **Introduction**

The commonest presenting symptom in the Out-patient department of any gynaecologic practice is abnormal uterine bleeding (AUB) [1]. It accounts for one-third of all gynaecologic visits [2] and for 70% of all the gynaecologic consultations among perimenopausal women [3].

Perimenopausal women are the women between the age groups of 40 and 52.

AUB in a perimenopausal women is when there is a substantial change in frequency, duration or the amount of bleeding, when there is bleeding in between periods, or when there is bleeding after 12 months of cessation of menses [4].

While most of these patients have benign diseases, a thorough investigation is necessary especially in the perimenopausal age group, where the chances of carcinoma are much higher [5, 6].

AUB has a significant impact on the physical, social, emotional and material quality of life. Along with a direct impact on the woman and her family, there are significant costs to both economy and health service as highlighted by a US study which reported financial losses of >\$2000 per annum due to work absence and home management costs [6A].

It may also lead to complications such as iron deficiency anaemia. In turn this has a significant impact on the health care system.

Main causes include fibroids, polyps, endometrial hyperplasia, carcinoma of endometrium or endocervix, and atrophic vaginitis [7].

Since the incidence of endometrial hyperplasia and carcinoma are higher in the perimenopausal age group, it is important to diagnose the cause of AUB accurately and as early as possible.

The various modalities for evaluation of uterine pathology include: endometrial sampling, ultrasonography, hysteroscopy, sonohysterography, magnetic resonance imaging and computed tomography.

In our study we are comparing and correlating the endometrial thickness as obtained by transvaginal ultrasound (TVS) with the histopathological results.

This is a retrospective study in which the case sheets of all the women in the perimenopausal age group, presenting with AUB, in whom both USG and Endometrial biopsy were done, were perused and the endometrial thickness as reported by USG was compared with the result of the histopathological examination to correlate the two and chi square statistics was performed.

USG is widely accepted as the first line diagnostic procedure in case of AUB<sup>[8, 9]</sup> due to the following advantages:

- It is a simple examination allowing clear visualization of most uterine conditions<sup>[10]</sup>
- It can be performed on an out-patient basis.
- Non-invasive and relatively more comfortable and accepted by the patients
- Does not require administration of anaesthesia
- Simple and economical.
- Available in most healthcare setups.

Endometrial biopsy is considered the gold standard in diagnosis. Here it was done by pipelle biopsy or Dilatation & curettage.

We haven't considered hysteroscopy and other modalities of diagnosis because they are relatively more expensive procedures which are not available in all healthcare setups.

### Methodology

This was a retrospective study done on patients of perimenopausal age group (40-52 years) who presented with AUB to the department of obstetrics and gynaecology in a medical teaching college hospital.

**Type of study:** Cross-sectional study

**Sample selection method:** Purposive sampling

**Sample size:** A total number of 64 patients in the perimenopausal age group who presented with AUB and in whom both TVS and endometrial biopsy were performed.

### Inclusion criteria:

- Women of perimenopausal age group (40-52yrs) with AUB
- No detectable pelvic pathology

### Exclusion criteria:

- Patients with abnormal uterine bleeding in adolescent, reproductive, post-menopausal age groups
- Women on hormonal treatment at the time of first presentation.
- Women with intrauterine device in situ.
- Women with bleeding disorders.
- Carcinoma of genital tract.
- Active genital tract infection.
- Pregnancy and related causes of bleeding PV

**Procedure:** Data were obtained from the records available in the medical records section of the hospital. The records included the following information:

1. Demographic details
2. Chief complaints including the types of abnormal uterine bleeding (menorrhagia, Metrorrhagia, Menometrorrhagia, Polymenorrhoea, Oligomenorrhoea, Other complaints)
3. Duration of complaints
4. Last menstrual period
5. Present and past menstrual history
6. Chronic medical illnesses
7. Bleeding disorders

8. General, systemic, abdominal and local pelvic examination
9. Investigations like : -
  - Haemoglobin
  - WBCcount
  - Platelet count
  - Bleeding and clotting time
  - Blood glucose levels
  - Serum TSH
  - Pap smear
  - Endometrial Biopsy done on all patients of AUB
  - TVS done in few patients presenting with AUB (Uterus: Position, length, breadth, width, Endometrial thickness, myometrium, abnormality, ovary)
  - Histopathology report obtained after examination of the biopsy material

**Ultrasonography (USG):** It was carried out by a Doctor with a Masters degree in radiology, using 12MHz probe. A transvaginal scan was done on an empty bladder. The report provided the following information: Uterine position and size (length, breadth, and width), endometrial thickness, myometrial texture, ovaries (size) and abnormalities if any.

**Endometrial Biopsy:** Biopsy material was obtained either by Pipelle biopsy or by Dilatation and curettage. The patient was put in dorsal position and the parts were painted and draped. The cervix was exposed using a Sim's vaginal wall speculum and an anterior vaginal wall retractor. The anterior lip of cervix was held with a volsellum and the uterocervical length was measured using a uterine sound. Then, the pipelle or endometrial curette was introduced into the uterine cavity and an endometrial biopsy was taken. The biopsy was then preserved in formalin and sent for histopathological examination. Anaesthesia may or may not have been administered.

**Statistical analysis:** The data obtained was analysed using statistical software SPSS V-20. The results are given in the form of descriptive statistics; chi square test was done to find the association.

### Results:

**Table 1:** Abnormalities seen on TVS

Abnormality on TVS	No of women	Percentage
Bulky uterus	1	1.6
Fibroid	17	26.6
Hyperplasia	18	28.1
Adenomyosis	2	3.1
Collection in Pouch of Douglas	1	1.6
Bulky uterus with fibroid	5	7.8
Bulky uterus with Hyperplasia	2	3.1
Bulky uterus with adenomyosis and fibroid	1	1.6
Bulky uterus with collection in pouch of doulas	1	1.6
Fibroid uterus with endometrial Hyperplasia	1	1.6
No Sonological Abnormality	15	23.4
Total	64	100

Of the 64 women considered, majority i.e., 37.6% had uterine fibroid while 32.8% had endometrial hyperplasia. 15.7 % ( 10 cases) had a bulky uterus, of which, 10% ( 1 case) wasn't

associated with any other uterine abnormalities. 23.4% of the women had no detectable sonological abnormalities.

**Table 2:** Endometrial thickness

Endometrial thickness (mm)	No of cases	Percentage
<= 5	17	26.6
6-10	24	37.5
11-15	11	17.2
16-20	9	14.1
21-25	2	3.1
26-30	1	1.6
Total	64	100.0

Majority of the women i.e., 25(37.5%) have a thickness between 6-10.9mm. 26.6% have thickness equal to or less than 5mm.

**Table 4:** Correlation of endometrial thickness with the histopathology

Endometrial thickness	Proliferative	Secretory	Hyperplasia without atypia	Hyperplasia with atypia	Disordered endometrium	Decisualization	Senile cystic atrophy	Total
<=5.9	7	5	3	0	1	0	1	17
6-10.9	8	10	4	0	2	0	0	24
11-15.9	4	1	4	1	0	1	0	11
16-20.9	1	4	3	0	0	0	1	9
21-25.9	0	0	2	0	0	0	0	2
26-30	0	0	1	0	0	0	0	1
Total	20	20	17	1	3	1	2	64

Here, we observed that of the 17 women who had hyperplasia without atypia, three women had an endometrial thickness of <=5, the exact values of endometrial thickness being 3.6mm, 4.3mm and 4.8mm and their ages 43, 42 and 45 respectively; 4 women had ET between 6 and 10.9mm; 4 women had ET between 11 and 15.9mm and 6 women had ET greater than 16mm.

One woman had hyperplasia with atypia. She was a postmenopausal woman, 45 years of age with an ET of 12.5mm. Two women had cystic atrophy, their ET being 4.3mm and 18mm their ages being 42 and 52 respectively.

After analysis, the chi-square value was 70.380 and the p value was 0.001. Therefore, the relation between endometrial thickness and histopathological lesion is significant.

## Discussion

In our study, of the 64 women considered, majority i.e., 46(71.9%) belonged to the age group of 40-45, which was also the case in G.L. Shobitha *et al.* study<sup>[11]</sup> with 36.4%.

The most common bleeding pattern among patients of our study was Menorrhagia (76.5%) followed by Menometrorrhagia (15.6%) while in the G.L. Shobitha *et al.* study, it was menorrhagia (40%) followed by metropathia Haemorrhagica (30%), in the Burman S C *et al.*<sup>[12]</sup> study, it was Menorrhagia (30.59%) followed by Metrorrhagia (22.35%) in the Kumari M *et al.*<sup>[13]</sup> study, it was menorrhagia (38.6%) followed by Polymenorrhagia (24.3%).

In our study most women were mostly multipara (87.6%) with 2 or more children which is corresponding with the observations of study by G.L. Shobitha *et al.* where 83.6% women were multiparous and the study by Kumari M *et al.* where 61.4% women were multipara.

In our study, 54.7% women didn't have any co-morbidities but a significant no of women (18.8%) had Diabetes Mellitus, 9.4% had Hypertension, 10.9% had both, 3.2% had thyroid disorders.

**Table 3:** Histopathologic examination

Lesion	No of women	Percentage
Proliferative Endometrium	20	31.3
Secretory Endometrium	20	31.3
Simple hyperplasia without atypia	15	23.4
Simple hyperplasia with Atypia	0	0
Complex hyperplasia without atypia	2	3.1
Complex hyperplasia with atypia	1	1.6
Disordered Endometrium	3	4.7
Decidualisation	1	1.6
Senile cystic atrophy	2	3.1
Total	64	100

Majority of the patients i.e., 31.3% each, had secretory or proliferative endometrium. 23.4% had simple hyperplasia without atypia. 4.7% had disordered endometrium.

DM and thyroid disorders are all hyper estrogenic conditions which predisposes a women to endometrial hyperplasia and carcinoma.

Also, a significant number of women i.e., 23(35.9%) were overweight and 3(4.7%) were obese, which are also hyper estrogenic conditions and predispose the women to endometrial carcinoma.

Majority of the patients under study i.e., 79.8% were found to be anaemic with Hb values lower than 11g/dL. This is a serious consequence of AUB which leads to fatigue and other associated disabilities which interfere with the daily activities and decrease the quality of life among the women.

On TVS, most common abnormality observed was uterine fibroid at 37.6%, followed by increased endometrial thickness at 32.8%, 15.7% bulky uterus and 23.4% women had no detectable sonologic abnormalities.

When compared to the study by Kumari M *et al.*, fibroid cases were maximum at 14.8% followed by bulky uterus 11.4%, adenomyosis 8.57%.

It was also observed that most cases of fibroid presented with menorrhagia which may be due to increase in surface area of the endometrium due to increase in size of uterine cavity and hyperestrogenemia leading to hyperplasia of the endometrium.

The endometrial thickness of the 64 women ranged from 3.6mm to 30mm with most women i.e., 25(37.5%) having a thickness between 6-10.9mm followed by 17(26.6%) women with thickness lower than 5mm.

This is different when compared to the study by G.L. Shobitha *et al.* where maximum number of women 25(45.5%) had an ET of 8-15mm, followed by 34.5% with 4-8mm.

The HPE reports showed that majority of the patients i.e., 31.3% each, had secretory or proliferative endometrium and 23.4% had simple hyperplasia without atypia. In total there were 28.1% cases of hyperplasia. There were no cases of simple hyperplasia with atypia. The study by G.L. Shobitha *et al.* and Burman S C

*et al.*, in comparison, shows a majority (45.45%) cases of hyperplasia followed by 30.9% cases of proliferative endometrium and a majority of 47.76% cases of proliferative followed by 23.53% of secretory endometrium respectively. We also had cases of disordered endometrium and decidualization which were absent in their study. We, unlike their study did not have a case of endometrial carcinoma.

In our study, on correlating the endometrial thickness with HPE, it was found that in certain women of age below 45, though the histopathology showed hyperplastic endometrium without atypia, the endometrial thickness was less than 5mm. This may have been because of a time gap between TVS and EB and hence by then the endometrium might have returned to normal. It is also seen that in certain women hyperplasia may be focal and so the HPE shows hyperplasia and the ET turns out to be normal. In such women hysterectomy or other invasive lines of treatment is unnecessary. They can be treated medically and advised to get an EB done once every 6months.

On the other hand, it was seen that all other women who had Hyperplasia without atypia had an ET value greater than 6.5mm. So, this value can be considered as the cut-off to decide on whether or not to perform EB and other invasive procedures.

### Conclusion

Hence, transvaginal ultrasound followed by HPE is the first line of investigation in perimenopausal women presenting with AUB, unlike, in the women of reproductive age group where TVS is followed by medical line of management and in the adolescent age group where endometrial biopsy is done very rarely if not ever.

The Endometrial biopsy should be done if the endometrial thickness is more than 6.5mm among women of age group 40-45. Following this, appropriate modality of treatment must be chosen based on the HPE report which may include medical line of management, minimally invasive methods or hysterectomy.

Since our sample size is small, we would recommend the study be repeated with a larger sample size. Also, studies can be conducted on the reason for inconsistency in the ET and histopathology (as observed in three of our patients) especially in case of hyperplasia and their implications.

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