

Evaluation of Endometrium with Sonographic and Histopathological Correlation in Perimenopausal Women with Dysfunctional Uterine Bleeding

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Abstract: Introduction: Dysfunctional uterine bleeding is a major gynaecological problem in the perimenopausal women. Aim & Objectives: The study was aimed to correlate the clinical findings with sonographic assessment and histopathology of the endometrium in perimenopausal women with DUB. Materials & Methods: This was a prospective study conducted on 100 patients in the department of Obstetrics and Gynaecology, Gauhati medical college and hospital from 1st August, 2016 to 31st July, 2017. TVS was performed in all these women followed by D & C and HPE of the endometrial curettings. Results: In the study, menorrhagia, was the most common menstrual complaint. Histopathological examination of the endometrium curettings revealed 29% patients to have proliferative endometrium, and 23% of the patient to have endometrial hyperplasia. When endometrial thickness was < 8 mm, no cases showed endometrial hyperplasia. Conclusion: This study showed that in perimenopausal women with DUB, the first investigation should be transvaginal sonogram. The primary indication for D & C should be in cases with endometrial thickness ≥ 8 mm.

Keywords: Perimenopausal bleeding, Dysfunctional uterine bleeding, Transvaginal sonography, Dilatation & curettage, Endometrial thickness.

1. Introduction

The endometrium which lines the uterine cavity is one of the most dynamic tissues in the human body. It is characterized by cyclic processes of cell proliferation, differentiation and death in response to sex steroids elaborated in the ovary.¹ Abnormal uterine bleeding is the commonest presenting symptom and major gynaecological problem responsible for about 70% of all gynaecologic out patients visits in the perimenopausal women². It occurs in various forms such as menorrhagia, polymenorrhea, polymenorrhagia, metrorrhagia, and menometrorrhagia. AUB may be an expression of hormonal milieu, or it could be the clinical presentation of benign or malignant lesions of female genital tract in perimenopausal woman. However, there are no detectable structural abnormalities in majority of cases, and this is called dysfunctional uterine bleeding (DUB). The diagnosis of DUB can only be made by excluding all other causes of bleeding. The specific diagnostic approach depends on whether the patient is premenopausal, perimenopausal or postmenopausal.

In 2001, the Stages of Reproductive Aging Workshop (STRAW) defined 'perimenopause' as the period beginning with menopausal transition and ending 12 months after the last menstrual period.^{3,4} While most of these problems of the perimenopause are caused by estrogen deficiency, some reflect estrogen excess or at least the effects of unopposed estrogen. These perimenopausal changes are unpredictable and are unique for each woman. Although irregular bleeding patterns are a normal and expected part of perimenopause, the incidence of uterine pathology and associated medical complication also increases in this age group⁵.

Dilatation and curettage is a simple procedure for histological evaluation of the endometrium. It can be carried out as an "office" procedure without anaesthesia. Despite its advantages, there are limitations to endometrial sampling. First a tissue sample that is inadequate for histologic evaluation, or the physician's finding of an unyielding or a stenotic cervix which defies penetration by the biopsy curette is encountered in up to 28% of biopsy attempts⁶. Secondly endometrial biopsy has a cancer detection failure rate of 0.9%⁷. Finally, it has the drawback of being a blind procedure with a chance of missing a small or focal lesion.⁸

To overcome these limitations, a non invasive diagnostic modality with no risk of complications has been sought. The diagnostic transvaginal ultrasonography is a simple, non invasive, safe and painless diagnostic modality of studying the endometrial pattern and its thickness accurately. The high frequency transducer placed nearer to the region of interest permits better visualisation of the uterus and the endometrium⁹.

The present study aims to correlate the clinical findings with sonographic assessment and histopathology of the endometrium in perimenopausal woman with DUB.

2. Objectives of the Study

- 1) To determine the efficacy of TVS in depicting the pattern of endometrium
- 2) To correlate the endometrial thickness by TVS with endometrial histopathology in woman with DUB.
- 3) To reduce the need for invasive procedure.

3. Materials and Method

The present study was conducted in the department of obstetrics and gynaecology, Gauhati medical college and hospital from 1st August, 2016 to 31st July, 2017 over a period of 12 months. Study included 100 patients in perimenopausal age group of 40 – 51 years presenting with DUB. It was a hospital based prospective cross sectional study.

Detailed history of menstrual complaints, obstetrics, medical, surgical history were noted. All the women were clinically evaluated – general, systemic and gynaecological examinations were carried out. All relevant investigations were done.

TVS was performed in all these women using ultrasonography machine Mindray Z6 and a vaginal probe V10 – 4BP. In the present study Endometrial thickness was measured as maximal double layer thickness in mid sagittal section at the thickest area of the endometrium near the fundus, including the outermost border of both sides of the endometrium.

A D & C and HPE of the endometrium were scheduled within 24- 48 hours of the TVUS as an outpatient procedure.

4. Results and Observation

Table 1: Distribution Of Patients According To Age:

Age Group	No of Patients	Percentage%
40 – 43	27	27
44 – 47	35	35
48 – 51	38	38

Table 1 shows the age wise distribution of patients. There was almost equal distribution of patients in the 44 – 47 and 48 – 51 age group.

Table 2: Distribution of Patients According to Parity:

Parity	No of Patients	Percentage
Nulliparous	4	4
Primiparous	12	12
Multiparous	84	84

Table 2 shows distribution of patients according to parity. Majority of the women are multiparous(84%).

Table 3: Distribution of Patients According to Presenting Menstrual Complaints

Menstrual Complaint	No of Patients	Percentage
Menorrhagia	45	45
Metrorrhagia	4	4
Menometrorrhagia	19	19
Metropathia haemorrhagica	18	18
Oligomenorrhoea	3	3
Polymenorrhoea	11	11

The majority of patients (45%) presented with menorrhagia and 19% with menometrorrhagia. 18% of the patients presented with metropathia haemorrhagica i.e., period of amenorrhoea of 3 to 6 months followed by heavy bleeding, a characteristic feature of perimenopausal anovulatory cycle.

4% patients presented with metrorrhagia, 3% with oligomenorrhoea, 11% with polymenorrhoea.

Table 3: Analysis of Histopathological Findings

Histopathology findings	No of patients	Percentage
Proliferative	29	29
Secretory	18	18
Disordered proliferation	21	21
Simple hyperplasia without atypia	10	10
Complex hyperplasia without atypia	6	6
Complex hyperplasia with atypia	7	7
Atrophic	6	6
Tissue inadequate for diagnosis	3	3

Histopathological examination of the endometrium curettings revealed 29% patients to have proliferative endometrium followed by 21% patients to have disordered proliferative endometrium, considered as an intermediate step between normal proliferative endometrium and endometrial hyperplasia. Hyperplastic changes were found in 23 patients, though only 7 of them had complex hyperplasia with atypia.

Table 4: Comparison Between HPE Findings and Endometrial Thickness:

Histopathology Finding	Endometrial Thickness(mm)				
	<4	4–8	8–15	15–20	≥20
Proliferative	0	23	5	1	0
Secretory	0	4	14	0	0
Disordered proliferation	0	2	8	9	3
Simple hyperplasia without atypia	0	0	10	0	0
Complex hyperplasia without atypia	0	0	2	4	0
Complex hyperplasia with atypia	0	0	0	4	3
Atrophic	1	5	0	0	0
Tissue inadequate for diagnosis	2	1	0	0	0
Total	3	34	40	17	6

When the TVUS findings of the endometrial thickness were compared with the histopathological examination report, it was found that out of the 34 patients with endometrial thickness between 4 and 8 mm, 25 showed proliferative changes, of which 2 showed disordered proliferation.

At endometrial thickness between 8 and 15mm, 14 patients showed secretory changes, 13 patients showed proliferative changes, of which 8 showed disordered proliferation. Hyperplastic changes were found in 12 patients, of which 10 showed simple hyperplasia without atypia and 2 showed complex hyperplasia without atypia. At endometrial thickness between 15 and 20 mm, 4 patients showed complex hyperplasia without atypia and 4 patients showed complex hyperplasia with atypia. In patients with endometrial thickness ≥ 20 mm, 3 patients showed complex hyperplasia with atypia.

Table 5: Correlation of Endometrial Thickness With Endometrial Hyperplasia

Endometrial thickness(mm)	No of patients	Endometrial Hyperplasia(mm)	Percentage
4	3	0	0
4 – 8	34	0	0
8 – 15	42	14	33.3
15 – 20	15	6	40
≥20	6	3	50

- In the present study when endometrial thickness was < 4 mm, no cases showed endometrial hyperplasia.
- When endometrial thickness is between 4– 8mm, no cases showed endometrial hyperplasia.
- When endometrial thickness is between 8 – 15mm, 33.3% cases showed endometrial hyperplasia.
- When endometrial thickness is between 15 – 20 mm, 40% cases showed endometrial hyperplasia.
- When the endometrial thickness is $\geq$ 20mm, 50% cases showed endometrial hyperplasia.

With endometrial thickness $\geq$ 8 mm, the specificity of TVS in detecting endometrial hyperplasia is 100% and positive predictive value is 100%. *P* value is < 0.0001 and chi square value is 17.543, which is highly significant.

5. Discussion

In the present study, menorrhagia was the commonest type of bleeding (45%) followed by metrorrhagia (19%), metropathia haemorrhagica (18%), polymenorrhoea (11%), metrorrhagia (4%) and oligomenorrhoea (3%) which is very similar to the study by Pillai SS¹⁰. Menorrhagia was also found to be a common clinical presentation in most of the previous studies by Jetley *et al*¹¹, Bhosle *et al*¹², Shobhitha GL *et al*¹³ (40%), Girija MK¹⁴ (40%). However Anjali Singh *et al*¹⁵ (2001) found polymenorrhagia as the major clinical entity.

In the present study proliferative phase (29%) followed by disordered proliferation (20%) was found to be the most common histologic pattern. Ours study was almost similar to the study by Pillai SS¹⁰, Acharya Veena *et al*¹⁶, Anjali singh *et al*¹⁵ (2001), Dr. S. Babu *et al*¹⁷ (2000). However in the study by Jetley *et al*¹¹, secretory endometrium was the most common finding at 32.4% followed by proliferative endometrium. Again Shobhitha GL *et al*¹³ found endometrial hyperplasia in 45.45% of cases. In the present study, the incidence of endometrial hyperplasia was 21%, which was close to the findings observed by Dungal G¹⁸, Pillai S S¹⁰.

In the present study when endometrial thickness was < 8 mm, no cases showed endometrial hyperplasia. All the 7 cases that showed major abnormality on histopathological evaluation i.e., complex hyperplasia with atypia had endometrial thickness >15mm. With endometrial thickness $\geq$ 8 mm, the specificity of TVS in detecting endometrial hyperplasia is 100% and positive predictive value is 100%.

This study thus corroborated the findings of similar study done by Aliya Aslam *et al*¹⁹ in 2009. Their study found that no major endometrial pathology is detected when endometrial thickness is less than 14 mm. No significant pathological changes were detected by Acharya Veena *et al*¹⁶ when endometrial thickness was < 14 mm. Deshmukh V *et al*²⁰ concluded that pathological endometrium was not found on histopathological examination report in patients with endometrial thickness <14.9mm. Study by Machado *et al*²¹ in 2005 concluded that endometrial thickness less than 5 mm did not need D&C as none of these patients had atypia or malignancy which is also corroborated in the present study. The study by Chatapavut *et al*²² concluded that

endometrial thickness of 8 mm or less is less likely to be associated with malignant pathology in perimenopausal women with abnormal uterine bleeding. Shobhitha GL *et al*¹³ found sensitivity, specificity, NPV, PPV for TVS is 93.2%, 68.96%, 72.72%, 90.9% respectively in detecting endometrial hyperplasia with an endometrial thickness cut off of 8mm. ET=8mm with sensitivity of 83.6%, specificity of 56.4% and NPV of 95.6% was proposed as the cut-off point for detection of the abnormal endometrium by Ozdemir *et al*²³.

6. Conclusion

Dysfunctional uterine bleeding is one of the most common problem in perimenopausal women. In the perimenopausal cycles, there is unopposed estrogen stimulation which leads to hyperplasia of the endometrium which can progress to endometrial cancer. The risk of development of endometrial cancer is 29% in patients with complex atypical hyperplasia and 2% in patients with hyperplasia but without atypia²⁴.

This study shows that in perimenopausal women with DUB, the first investigation should be transvaginal sonogram. It is safe, relatively inexpensive and non invasive. It will not only reveal endometrial thickness, but also other pelvic pathology.

The primary indication for invasive methods like D & C should be in cases with endometrial thickness $\geq$ 8 mm, in order to obtain endometrial tissue to exclude precancerous lesion or endometrial cancer.

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