www.jmscr.igmpublication.org
Impact Factor (SJIF): 6.379
Index Copernicus Value: 79.54
ISSN (e)-2347-176x ISSN (p) 2455-0450
crossrefDOI: https://dx.doi.org/10.18535/jmscr/v6i12.142

IGM Publication
Journal Of Medical Science And Clinical Research
An Official Publication Of IGM Publication

Role of Transvaginal Ultrasound and Endometrial Biopsy in Evaluating Abnormal Uterine Bleeding in Reproductive and Perimenopausal Age Group

Authors
Dr Niharika. S[1*], Dr Nyma Sultana[2]
[1]Assistant Professor, Department of Obstetrics & Gynaecology, Mamata Medical College, Khammam, Telangana, India
[2]Assistant Professor, Department of Obstetrics & Gynaecology, Mamata Medical College, Khammam, Telangana, India
Corresponding Author
Dr Niharika. S
Mobile: 97046 30266

Abstract
This was a prospective study conducted at OBG department Mamata Medical College, Khammam .This study was carried out with 100 women in the reproductive and perimenopausal age group who presented with AUB during the period from Jan 2016 to Jan 2017. All the patients were subjected to Transvaginal Ultra Sound and dilatation and curettage. 45% of the patients in the study are between 41-46 yrs. 55% of patients presented with menorrhagia. 64% of patients had anaemia, 23 %diabetes, and 5% thyroid disorders were associated risk factors. The mean endometrial thickness was 10.1mm and majority of cases 50% had endometrial thickness16mm. Transvaginal Ultra Sound finding were reported as normal in 21%, fibroid in 38%, polyp in 9%, adenomyosis in 9%, hyperplasia in 9% and 14% were atrophic, bulky uterus. Fibroid was a common finding in our study. Histopathology reports of D&C showed the 63% were proliferative endometrium, 21% were secretory endometrium, 8% were hyperplasia and 8% were others such as atrophic endometrium. In our study Transvaginal Ultra Sound showed 100% sensitive and specific for the diagnosis of polyp. In our study when the endometrial thickness more than16 mm, the pathology of the endometrium was simple, complex hyperplasia. No carcinoma was diagnosed in the study. 84% of perimenopausal women underwent hysterectomy the indication being severe menorrhagia and the HPE findings correlates with the Transvaginal Ultra Sound finding. This study proves that Transvaginal Ultrasound, as a diagnostic tool is more sensitive than specific when compared to the histopathology findings. Both the methods of evaluating the endometrium namely the transvaginal ultrasound and endometrial biopsy are complementary to each other,therefore both should be used in evaluation of AUB.
Keywords: *Abnormal uterine bleeding, Transvaginal ultra sound, dilatation and curettage, Biopsy, Diagnosis.*

Introduction

The main concern in the reproductive and perimenopausal age group of women is that the Abnormal Uterine Bleeding (AUB) could be the only external manifestation of a hidden serious pathology such as carcinoma and, benign lesions like endometrial hyperplasia. Endometrial

hyperplasia could be a fore runner of endometrial carcinoma and is a common finding in women with perimenopausal bleeding.

The incidence of endometrial carcinoma is rising both in relation to cancer cervix and in absolute terms and the disease which was formerly confined to the postmenopausal women is now occurring with increased frequency in the middle age and perimenopausal women as well. Endometrial curettage has long been considered to be the "Gold Standard" for the diagnosis of abnormal uterine bleeding. However dilatation and curettage has a failure rate of 12 -30%. Undirected sampling either by curettage or by suction aspiration can miss the lesions when the abnormality is focal. With the advent of transvaginal sonogram, Gynaecologist now have a simple outpatient method of studying the endometrium for detecting malignant lesion or their precursors at an earlier stage. The thickness and the internalecho texture of the endometrium in the various phases of menstrual cycle as seen in transvaginal sonogram correlates well with endometrial histology.

The echogenicity of the endometrium has certain characteristics during various phases of the menstrual cycle, this may help in the evaluation of the endometrium, the histology to be evaluated with precision. This study undertaken to correlate the findings of the two diagnostic modalities namely the transvaginal sonogram and the histo pathological examination of the endometrium, in the evaluation of women with reproductive age and perimenopausal age.

Objectives of the study were to study the incidence of AUB in the reproductive and perimenopausal age group of women, various causes and to correlate the findings of transvaginal sonogram and endometrial histopathological pattern in women presently with AUB.

Material and Methods

This prospective study has carried out on 100 women in the reproductive and perimenopausal age group who present with AUB during the period from Jan 2016 to Jan 2017.

Exclusion criteria

Patients with carcinoma cervix

Patients on Oral contraceptive pills Patients with blood dyscrasia.

Inclusion criteria

Age group between 20-50 yrs

Not on any Hormone therapy

Abdomen and pelvic examination showing a pelvic mass

No evidence of blood dyscrasias,

Not yet attained menopause

Bleeding not related to pregnancy

A Detailed Gynaecological history had been taken, a thorough examination carried out, after making a provisional diagnosis, cases were sent to Transvaginal ultrasound and Dilation and Curettage (D&C) A 7.5 MHz Elcot transvaginal sector probe with phased array and end firing potential were used. All the patients were asked to empty their bladder prior to the examination. The probe is covered with a sterile sheath or condom containing the acoustic gel. The scan was performed with the patient in a supine position. The transducer was introduced into the posterior vaginal fornix.

The uterus was scanned in long axis and coronal views with special emphasis on endometrium. The scanning of the uterus was first done in the sagittal plane from fundus to the internal os. The regularity of the uterus was noted. The length, anteroposterior measurements and transverse dimensions of the uterus were noted and endometrial volume calculated. Anteroposterior measurements of endometrial thickness were taken from basalis to contralateral basalis in the long axis of the endometrium. Oblique semicoronal views were avoided as this may cause the endometrium to appear thicker. Uterine cavity examined systematically in both sagittal and coronal views for the presence of submucous fibroid polyps, endometrial polyps, adenomyosis or abnormal endometrial architecture.

If there is suspicion of endometrial carcinoma, the evidence and extent of myometrial invasion were noted. Now the probe angled to the right or left of midline in the sagittal plane to image the ovaries.

The three dimensions were measured. The internal echotexture of the ovaries were also imaged and any abnormalities were noted. The entire pelvis was additionally examined to rule out pathology. The transducer is close to the pelvic organ transducer is closer to the pelvic organs, so higher frequencies can be used, reducing attenuation of the sound beam resulting in improved overall image quality.

Patients were hospitalised and after necessary pre op precautions were taken curettage was carried on. Patients were placed in lithotomy position. Under aseptic precautions, under general anaesthesia, perineum was painted and draped. A routine pervaginal examination carried out. Endocervical curetting was taken. Uterus was then sounded and its length was noted. After serial dilatation of the cervix, a sharp curette was introduced and the isthmus was curretted first, followed by all the quadrants curetted. The curettings were sent for histopathological examination. The biopsy reports were studied**.**

Statistical Analysis

The quantitative variables between any two groups were compared using parametric {T- independent test} and non parametric tests {Mann Whitney U Test}, wherever appropriate. To compare proportions chi square test and Fischer's exact test were used wherever appropriate. In all comparisons, a P value of < 0.05 was considered to be statistically significant.

Results

The gynaecological cases attended at out-patient department(OPD) were 1200, out of which the diagnosis of the AUB cases were Fibroid – 420 patients,DUB-300 patients ,Adenomyosis-200 patients,Malignancies-100 patients ,others like polyp, hyperplasia out of which 100 cases were selected for my study.

Table 1 Age, Age at menarche, Parity of patients

Age	No/%	age at menarche	No/%	Parity	No/%
<35	12	13	6	1	7
35-40	29	14	32	2	46
41-45	45	15	30	3	31
>45	14	16	32	4	16

Table 2: Bleeding disorders

Bleeding disorders	No/%
Menorrhagia	55
Polymenorrhea	27
Metrorrhagia	9
Metropathia	9

Table 3: Associated Risk factors

Risk factors	No/%
Anaemia	64
Diabetes	23
Hypertension	2
Thyroid	5
Thyroid and Anaemia	2
Hypertension and Anaemia	2
Hypertension and	2

Endometrial thickness

The distribution of cases with respect to endometrial thickness is shown in table 4. The mean endometrial thickness was observed to be 10.1 ± 0.6 mm and it ranged between 1 to 28mm. It may be seen majority of the cases 50% had <8mm thickness and only 13% had thickness greater than 16mm.

Table 4: Endometrial thickness

ENDOMETRIAL THICKNESS IN MM	N0/%
<8	50
8-12	19
12-16	18
16-20	9
>20	4

Diagnosis of abnormal uterine bleeding *using transvaginal scan*

Various conditions as seen as appearance through scan is shown in Table 5. It shows the percentage of cases presenting with different form of fibroids, polyps, hyperplasia, adenomysis etc., Among the fibroids, cases with simple fibroids and intramural fibroids were higher compared to other forms. Similarly among those with polyps, those with endometrial polyps were high. It shows the

distribution of cases based on the impression classified as fibroid, adenomyosis, polyps, thickened endometrium, endometrial hyperplasia, bulky uterus. It may be seen in 21% of cases, the impressions are normal.

Table 5: Impressions based on the transvaginal scan

transvaginal scan	No/%
Normal	21
Adenomyosis	9
Hyperplasia	9
Polyp	9
Fibroid	38
Atrophic Endometrium	2
Thickend Endometrium	7
Bulky uterus	4
Ca Cx	1

Association between HPE findings and endometrial thickness

The proportion of cases with histopathological findings from D&C scrapings with regard to endometrium thickness are shown in Table 6. It may be seen that there was a significant association between the endometrium thickness and the different HPE findings of scrapings from D&C (Chisquare =81.3, df=32, P value=0.00).Occurrence of proliferative condition was the highest in endometrium thickness upto 16mm, among those with endometrium thickness >16mm, the condition secretory was high.

Table 6: Association of histopathological findings of D&C and endometrium thickness

HPE of D &C	T hickneses in mm			
	<8	8-12	12-16	>16
Atropic endometrium	1	1		
Complex hyperplasia	1			1
Cystoglandular hyperplasia		2	1	1
Endocervical inasion			1	
Mixed pattern		1		
Proliferative	40	12	8	3
Secretory	6	3	8	4
Simple hyperplasia				2
Tissue in sufficient	2			

The findings based on the histopathological examination of scrapings obtained from D&C are shown in chart 9 and Table 7. About sixty three (63%) percentage of cases were found to be proliferative followed by the condition secretory (21%). Other conditions like mixed pattern, complex hyperplasia, atropic endometrium, simple hyperplasia, cystoglandular hyper plasia endocervical inasion were also seen in few cases. With regard to polyp and hyperplasia 7 and 9 cases respectively were diagnosed by TVS and all these cases underwent hysterectomy and presence of polyp and hyperplasia in the hysterectomy specimen was analysed this shows it is a very good tool in diagnosing condition and TVS was more specific.

Table 7: Histopathological examination of scrapings obtained from D&C.

Histopathology	No/%
Proliferative	63
Secretory	21
Simple hyperplasia	2
Complex hyperplasia	2
Cystoglandular hyperplasia	6
Atropic endometrium	2
Tissue in sufficient	2
Endocervical invasion	1
Mixed pattern	1

Discussion

This was a convenient prospective study done on 100 patients attending the Out Patient Department of Obstetrics & Gynaecology at Mamata Medical College with complaints of Abnormal Uterine Bleeding. In these patients detailed history and thorough examinations were carried out. All the patients were subjected to transvaginal Ultra Sound and Dilation & Curettage.

Dubinsky.TJ et al[1] has described that transvaginal sonogram is preferred over biopsy because, Less invasive procedure Painless, No complications, More sensitive for detecting carcinoma while biopsy is specific. Ultrasonography may also be used as a first line investigation in women with abnormal uterine bleeding, because it is cost effective, sensitive and well tolerated method in combination with physical examination and endometrial biopsy. As the endometrial histology can be predicted with accuracy depending on the endometrial thickness and internal architecture of the endometrium, it actually became “Sono Microscopy” wherein structures that is not discernible with the naked eye can be appreciated. On HPE proliferative endometrium was found in 53% and 20.7%, and

simple hyperplasia was seen in 8.7%and 8.5% respectively. In our study we had 63% of proliferative endometrium and 4% of simple hyperplasia without atypia.

DHQ Hospital and Nishtar Hospital,in Multan et al[2] study showed 54.8% fibroid uterus diagnosed by transvaginal ultrasonogram, among patients presented with abnormal uterine bleeding whereas, in our study fibroids were diagnosed in 38%, which is a significant finding. In the Minagawa's study[3], of the 121 patients, with perimenopausal bleeding with a cutoff of 20mm, the histological diagnosis of the endometrium included 13 endometrial cancers, 9 endometrial hyperplasias (one atypical hyperplasia and 3 hyperplastic polyps), and 10 normal endometrium. Our study significantly correlates with the above study when the endometrial thickness was >16mm and showed 13% of hyperplasia without atypia by histopathological diagnosis.

Towbin, March et al[4] had found that in their analysis of 131 patients with perimenopausal bleeding, a thick endometrial stripe were found to correlate strongly with the presence of intrauterine pathology and when endometrial thickness measure > 15mm,and the findings correlates with our study when the endometrial thickness was >16mm were associated with pathology.

Lewin et al[5] showed that Transvaginal sonogram can reliably diagnose endometrial thickness greater than 5 mm and found to be 100% sensitive and 64% specific in identifying endometrial pathology. Whereas in our study when the endometrial thickness was >3mm it was 100% sensitive and 87% specific in identifying pathology which is a significant finding.

In Loverro et al[6] study there was no case of endometrial cancer with a cut-off point of 5mm endometrial thickness, whereas all patients with endometrial thickness more than 15mm at transvaginal sonogram had an endometrial carcinoma. In a group of patients with endometrial thickness between 6 and 14 mm, they found an atrophic endometrium, benign and malignant pathology. Our study correlates with above study when the cut off point was 3mm, the endometrium showed atrophic changes .Even when the endometrial thickness was 22mm, which have found hyperplasia and not carcinoma.

Kufahl. J and Pedersen.I et al[7] showed a sensitivity of 90.3% and a specificity of 24.8% for endometrial pathology a cutoff value of 4mm by transvaginal sonogram significant for diagnosing abnormal endometrial pathology. In our study showed a sensitivity of 87% and specificity of 16%, for a cutoff value of 3mm by TVS which significantly correlates with above study.

Epstien et al[8,9] missed all polyps by D&C when the cut off point was >7mm .In our study out of 31% of hyperplasia 9% were polyps diagnosed by TVS which is a significant finding. This proves the value of combined evaluation of both Transvaginal ultrasound and curettage in evaluating cause of AUB.

Tongsong et al[10] reported transvaginal sonography is a simple non-invasive procedure. It can be used as a screening test for patients with perimenopausal and postmenopausal bleeding. Endometrial thickness of less than 7mm was found to be predictive of normal endometrium. According to Minagawa et al[11] all women with atypical uterine bleeding for postmenopausal women with endometrial thickness more than 5mm, and perimenopausal women with thickness more than 20mm is the cutoff level, above which an endometrial biopsy will be mandated. Below a cutoff of 4-5mm in the anteroposterior thickness of the endometrium for women with postmenopausal bleeding, there may not be significant associated pathology. Thus transvaginal sonogram may be helpful in distinguishing patients with minimal endometrial tissue caused by postmenopausal atrophy and patients with significant amount of endometrial tissue or polyps and are in need of further evaluation. Larson et al[12] showed that dilatation and curettage was significantly more accurate in identifying cancer and predicting final grade of the disease. Still the false negative rate of dilatation and curettage for the diagnosis of endometrial cancer may be as high as 2 to 6%.

Endometrial pathology is found significantly in the age group of women above 35yrs. According to our study the Transvaginal Ultrasound procedure is more sensitive in diagnosing he abnormal endometrium, in women younger than 35 yrs. But it is not very helpful in diagnosing hormonal changes in the endometrium, as well as malignant changes commonly occurs in older women. Dilatation & Curettage gives all information specific to the disorders of endometrium but can fail when the disease process is early and progressive by missing the affected areas. This study proves that Transvaginal Ultrasound, as a diagnostic tool is more sensitive than specific when compared to the histopathology findings. Both the methods of evaluating the endometrium namely the transvaginal ultrasound and endometrial biopsy are complementary to each other, therefore both should be used inevaluation of AUB.

References

1. Dubinsky T, Abu Gazzehy, Stroeh Lein K, Role of TVS and endometrial biopsy in the evaluation of dysfunctional uterinebleeding in peri and post menopausal women. in measurement ofendometrial thickness in post menopausal women: Br. J.obstel., gynaecol,98;370,1999.
2. Rishad Hafiz, Mohammad Ali, Mansoor ahmad Fibroid as a causative factor in menorrhagia and its management, Pakistan. J.Med Res,2003 Vol.42 No 3, 42-48.
3. Minagawa Y ; Sato S ito M, Onohara Y. Nakamotos, Kigawa . Transvaginal ultrasonography and endometrial biopsy as a diagnostic schema for endometrial cancer and hyperplasia. *J. Gynecol obslet Invest 2005 ; 59 (3) : 149-54.*
4. Towbin, March et al. Office hysteroscopy versus transvaginal ultrasonography in post menopausal bleeding. Am J Obstet Gynecol 1996;174:1678-82.)
5. M.N. Nasri, J.H. Shepherd, M.E. Setchell, D.G. Lowe & T.Chard: The Role of vaginal scan. Lewin A, Gabis L, Ushakov F, Anteby SA, Endometrial measurement by transvaginal sonography in post menopausal bleeding, *Harefuah 1996 May 15; 130 (10) ; 662-8.*
6. Loverro G, Bettocchi S, Cormio G, Nicoloardiv, Transvaginal sonography and hysteroscopy in post menopausal uterine bleeding. *Marturitas 1999 Oct 24 ; 33(2) : 139-44.*
7. Kufahl J, Pedersen J, Sindberg Eriksen P, Helkjaer PE, Transvaginal ultrasound, endometrial cytology by Gynoscann and histology obtained by uterine explora curette compared to the histology *Acta obstet Gynaeacol Scand 1997 Sep; 76(8 : 790-6.*
8. Epsterin E, Valentin L. Rebleeding and endometrial growth in women with PMB and endometrial thickness less than 5mm managed by dilatation and curettage or ultrasound follow-up: a randomized controlled study. *Ultrasound obstet Gynecol 2001 Nov 18(5), 499-504.*
9. Epstein E, Skoog L, Valentin L, Comparison of Endorette and D & C for sampling of the endometrium in women with post menopausal bleeding. *Acta Obstet Gynecol Scand, 2001 Oct ; 80(10) 959-64.*
10. Tong Song T, Pongnarisom C, Mahanuphap, Use of vaginal sonogrpahic measurements of endometrial thickness in the identification of abnormal endometrium in Peri menopausal and Postmenopausal bleeding. *J Clin Ultrasound 1994 Oct ; 22 (8) : 479-82.*
11. Minagawa Y; Sato S ito M, Onohara Y. Nakamotos, Kigawa. Transvaginal ultrasonography and endometrial biopsy as a diagnostic schema for endometrial cancer and hyperplasia. *J. Gynecol obslet Invest 2005 ; 59 (3) : 149-54.*
12. Larson DM, Johnson KK, Broste SK et al, comparison of D & C and office endometrial biopsy in predicting final HP grade in endometrial cancer. *J. Obstet Gynecol 1995; 86:38.*