



ULTRASONOGRAPHIC EVALUATION OF UTERINE LESIONS

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ABSTRACT

Introduction: Ultrasonography is a valuable diagnostic aid in many branches of medicine and it is of major importance in Obstetrics and Gynecology. It is particularly well suited to examine the uterus, as the uterus is a homogeneous organ and focal area of inhomogeneity as well as any abnormality in shape and size can be detected. **Aim:** To evaluate the ultrasonographic characterization of uterine lesions. **Materials and Methods:** This prospective cohort study was done in a tertiary care teaching hospital. The study included 50 patients referred to radiology department with suspected clinical diagnosis of uterine lesions. All the sonographic examinations were performed through transabdominal and transvaginal route. Ultrasound diagnosis was confirmed with the histopathological report of the lesions. **Results:** Most common uterine lesion was fibroid followed by carcinoma cervix. Fibroids had well defined border in 22 patients and ill defined in 3 patients. Intramural location was most common. Among the 9 adenomyosis cases, majority of the patients had poor endometrial-myometrial differentiation. Carcinoma cervix was seen in 13 patients and endometrial carcinoma was seen in 3 cases. Cervical cancer lesions had ill defined border in 9 patients and well defined in 4 patients. Endometrial carcinoma had thickened common endometrial thickness (CET) in one patient and two of them had mass lesion. **Conclusion:** Ultrasonography is a primary tool which is simple, non-invasive, widely available and relatively inexpensive modality to detect and to study the characteristics of uterine lesions.

KEYWORDS : Adenomyosis, fibroid, ultrasonography.**Introduction**

Ultrasonography is a valuable diagnostic aid in many branches of medicine and it is of major importance in Obstetrics and Gynecology. Uterus is the important female organ which is affected by many benign and malignant lesions. Fibroids also known as leiomyomas or simply myomas, are the most common solid pelvic tumors in women occurring in the reproductive age group. Most common location of fibroids is the intramural, can also be located in subserosal or submucous region. On ultrasound fibroids are most commonly hypoechoic in echotexture. They frequently distort the external contour of the uterus.

Adenomyosis is a condition characterized pathologically by the presence of endometrial glands and stroma within the myometrium. On transabdominal ultrasonography, there is diffuse uterine enlargement with a normal contour, normal endometrial texture and normal myometrial texture. Other benign lesions include endometritis, polyp and congenital malformation of the uterus.

The common malignant lesions include carcinoma cervix, endometrial carcinoma and sarcoma of the uterus. In India carcinoma cervix is the most common gynaecological malignancy¹. On ultrasound carcinoma cervix appears as an enlarged, irregular, hypoechoic mass that may mimic a cervical myoma. If tumor obstructs the endocervical canal, hydrometra and or hematometra results. Ultrasonographically a thickened endometrium must be considered cancer until proven otherwise. The findings of an endometrial thickness greater than 5mm, a polypoid endometrial mass or collection of fluid within the uterus requires further evaluation.²

Ultrasonography is simple to perform, causes no patient discomfort, is non-invasive, relatively inexpensive and widely available. It is particularly well suited to examine the uterus, as the uterus is a homogeneous organ and focal area of inhomogeneity as well as any abnormality in shape and size can be detected. Wilde Sue and Scott-Barrett Sarah²⁰⁰⁹³ say that USG is usually the initial investigation for examining the female pelvis.

Ideally both transabdominal and transvaginal scans should be performed. In addition to the transabdominal ultrasonography, the transvaginal ultrasonography is becoming useful adjunct in the evaluation of uterine lesions. It gives an enhanced and magnified but clear image. There is no discomfort of full bladder to the patient and it gives a better image of lesions. Transvaginal scans are more sensitive for the diagnosis of small fibroids. B Goldstein MD et al⁴ concluded that transvaginal sonography can be used safely as the initial diagnostic

test to evaluate the endometrial lining in a woman with postmenopausal bleeding. William H. Parker M.D⁵ states that transvaginal ultrasonography is the most readily available and least costly technique and may be helpful for differentiating myomas from other pelvic conditions.

Sheetal Chopra et al⁶ are of opinion that transvaginal ultrasonography is an important and advanced tool in the diagnosis of diffuse adenomyosis. However the examination is impossible in virgin patients or patients with narrow vagina. Its use is restricted in patients having congenital anomalies of genital tract.

This study was done to find out intrauterine or extrauterine causes of per vaginal bleeding and to evaluate the ultrasonographic characterization of uterine lesions. The ultrasonographic diagnosis was confirmed with the postoperative histopathological report of the lesions.

Materials and Methods

This was a prospective cohort study, done in the Department of Radiodiagnosis, Medical College & S.S.G. Hospital, Vadodara. The study included a total of 50 patients referred to radiology department with clinical diagnosis of uterine lesion. Written consent of the patients was taken. The detailed medical history of the patient including the personal information, presenting complaints, menstrual history and other relevant history was taken.

The gray scale ultrasonography and color Doppler scan was performed with real time phased array system with 3.5MHz, 5MHz and transvaginal probe of 7.5 MHz on MyLab40¹ ultrasonography machine of Esaote¹ and Philips iu-22. All the sonographic examinations were performed through transabdominal and transvaginal route. Transvaginal ultrasonography was not done in patients who had active per vaginal bleeding and infection. Clinically suspected uterine lesions which did not show any pathology on ultrasonography were excluded from the study.

Ultrasonographic examination included the size of uterus, type of lesion. The lesions were studied for their location, number, site, and echogenicity. Doppler findings of mass lesion were done to know whether flow was present or absent. The histopathological report of the lesions of the uterus of patients who underwent surgery was compared with the ultrasonographic diagnosis.

Results

The study included 50 patients with suspected uterine lesions. Fibroids were the most common lesions which were seen in 25 patients.

Carcinoma cervix was seen in 13 patients and adenomyosis and endometrial carcinoma consisted 9 and 3 respectively.

Table 1: Distribution of uterine lesions

Type of Lesion	Total number
Fibroids	25
Carcinoma of cervix	13
Adenomyosis	09
Carcinoma endometrium	03

Fibroids presented with a most common presentation of menorrhagia in 44% patients with fibroids. These were located on anterior wall in 12 cases and fundal location was seen in 10 patients. These were single in 21 patients and multiple in remaining 4 patients. Fibroids had well defined border in 22 patients and ill-defined in 3 patients. Intramural location was most common in 24 patients and only one patient had subserosal location. Fibroids had hypoechogenic appearance in 15 patients, isoechogenic in 6 patients. Hyperechogenic and mixed appearance was seen in each of 2 patients. On Doppler flow was seen in only 5 patients and was absent remaining 20 patients.

Table 2: Echogenicity of fibroid lesions

Echogenicity	No of patients	Percentage(%)
Isoechoic	06	24
Hypoechoic	15	60
Hyperechoic	02	08
Mixed	02	08
Total	25	100

Adenomyosis was common in the 41-50 years age group. Among the 9 adenomyosis cases, majority of the patients had poor endometrial-myometrial differentiation. Six patients had bulky uterus and heterogeneous myometrium was seen in 6 patients.

Table 3: Sonographic features of Adenomyosis

Ultrasound feature	No of patients	Percentage
1. Size of uterus		
Normal	03	33.34
Bulky	06	66.66
2. Poor endometrial-myometrial differentiation		
Present	07	77.78
Absent	02	22.22
3. Myometrial cyst		
Present	02	22.22
Absent	07	77.78
4. Heterogeneous myometrium		
Present	06	66.66
Absent	03	33.34

Among the malignant lesions of uterus, carcinoma cervix was seen in 13 patients and endometrial carcinoma was seen in 3 cases. Irregular vaginal bleeding was the most common presenting complaints in 7 patients with carcinoma cervix followed by discharge pervaginuum seen in 5 patients. Cervical cancer lesions had ill-defined border in 9 patients and well defined in remaining 4 patients. Hypoechogenicity of the lesions of cervical cancer was seen in six patients and appearance was isoechogenic in 5 patients. On color Doppler, flow was present in 10 patients with cervical cancer and was absent in 3 patients.

Table 4: Echogenicity of Carcinoma Cervix lesions

Echogenicity	No of patients	Percentage (%)
Isoechoic	05	38.46
Hypoechoic	06	46.14
Hyperechoic	01	7.70
Mixed	01	7.70
Total	13	100

Mean age of presentation of endometrial carcinoma was 51 years. On ultrasonography, endometrial carcinoma had thickened CET in one patient and remaining two had mass lesion.

Discussion

Fibroids were the most common lesions in our study. Age of presentation in our study and the study done by Jyoti C et al⁷ was similar. Fibroids were more common in 31-50 years of age group. Most common presentation of fibroids in our study and Jyoti C et al⁷ study was menorrhagia, which was seen in 44 % and 43.82 % respectively. Fibroids are usually single lesion and found in intramural location. Observation of fibroids presenting as single lesion was similar to the study done by Exacustos C, Rosati P et al,⁸ constituting 76 % in present study to 88% in their study. Intramural location was most common in both the present and Shia Salen et al² study. In the study done by Lev Toaff AS et al⁹ majority of the fibroids had hypoechoic appearance, which was similar to our study. On Doppler central vascularity of fibroids was absent in majority of cases in both the present and Trampe BS et al study¹⁰

In our study adenomyosis was common in 41-50 years age group. This was similar to study done by Bryann Bromley et al,¹¹ 44% in comparison to 56% in their study. In both the studies endometrium had poor differentiation on ultrasound 77 % versus 78%. Adenomyosis patients had bulky uterus in 66% patients in our study where as in Bryann Bromley et al study,¹¹ it was seen in 95% patients.

Mean age of presentation of carcinoma cervix in present study was 45 years and it was 47 years in the study done by Michael A Bidus et al¹² Most common presentation of carcinoma cervix was irregular bleeding (53.84%) followed by vaginal discharge (38.46%) in both present study and study done by Ijaiya M A et al¹³ on comparison for echogenicity of the lesions with study done by E Epstein et al¹⁴ findings were similar in both the studies. Most patients showed hypoechoic appearance of the cervical mass followed by isoechogenic pattern. Hypoechogenic and isoechogenic appearance was seen in 46.14 % and 38.46% in present study and 55% and 30% in their study respectively. Internal vascularity of cervical mass lesions was seen in 76% patients in our study but in E Epstein et al study it was present in 90% of patients.

Endometrial carcinoma was present in 3 patients. Mean age of presentation in our study was 51 years, in the study done by Hamza H et al¹⁵ mean age was 59 years. Endometrial carcinoma lesions were echogenic in 88% and isoechoic in 12% in study by Atri et al¹⁶. In contrast to their study, 50% of lesions were echogenic and 50% were isoechoic in our study.

Conclusion

In conclusion, ultrasonography with good equipment when appropriately performed by radiologist, using a proper methodology and standard guidelines has proved to be a very highly useful diagnostic and reliable method. Ultrasonography is a primary tool which is simple, non-invasive, widely available and relatively inexpensive modality to detect and to study the characteristics of uterine lesions. There are no radiation hazards with the use of it. Thus it has become indispensable tool in the evaluation of uterine lesions

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