

STUDY CLINICAL PROFILE OF UTERINE FIBROIDS AND RADIOLOGICAL APPEARANCE OF UTERINE FIBROIDS

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ABSTRACT

Background: Uterine fibroids, also known as leiomyomas or myomas, are the commonest uterine neoplasms. They are benign tumors of smooth muscle origin, with varying amounts of fibrous connective tissue. Fibroids usually arise in the myometrium but may occasionally be found in the cervix, broad ligament or ovaries. They are multiple in up to 84% of women. Fibroids have been reported to occur in up to 70% of women by the age of 50 years and are especially common in black women, who also often have more severe disease. **Aim & Objective:** 1. study clinical profile of uterine fibroids and radiological appearance of uterine fibroids. **Method: Study design:** Cross sectional study. **Study setting:** Department of Radiodiagnosis, National institutes of medical sciences Jaipur, India. **Study duration:** 1 year from January 2023 to January 2024. **Study population:** All patients coming to our institute during study period according to exclusion and inclusion criteria **Sample size:** 100 **Result:** Majority of cases were from 36-45 years age group 35 cases followed by 29 cases in 46-55 years age group, 17 cases in 26-35 years group and 2 cases in 18-25 years age group. most of the cases complained heavy menstrual bleeding 77 followed by pain found in 38 cases, pain during intercourse 11 cases, infertility in 8 cases and 3 cases presented with enlarged abdomen. majority of cases diagnosed with intramural fibroids 67 cases followed by subserosal fibroids 14, pedunculated fibroids found in 8 cases and 11 cases presented with submucosal fibroids. radiographic features plan radiograph shows Popcorn calcification in 10 cases, USG findings Hypoechoic 32, Isoechoic 26, Hyperechoic 29, Echogenic foci with shadowing 13. CT findings Soft tissue density lesions and may exhibit coarse peripheral or central calcification 100, Distort the usually smooth uterine contour 100. MRI findings T1 low to intermediate signal intensity compared with the normal myometrium 80, Irregular, T1 hyperintense rim around a centrally located myoma 11, Fibroids with cystic degeneration appearing as high T2 signal 7 and T1 C+ (Gd) the marked high signal intensity with gradual enhancement 2. **Conclusions:** Majority of cases were from 36-45 years age group, most of the cases complained heavy menstrual bleeding, majority of cases diagnosed with intramural fibroids, Uterine fibroids are common tumors and although benign they can be associated with significant morbidity. They may be encountered incidentally when performing imaging for other reasons and are usually easily recognizable. However, degenerate fibroids can have unusual appearances. Awareness of the various appearances enables a prompt diagnosis and can guide treatment.

Keywords: Uterus, leiomyoma, imaging, sonography, CT, MRI

INTRODUCTION

Uterine fibroids, also known as leiomyomas or myomas, are the commonest uterine neoplasms. They are benign tumors of smooth muscle origin, with varying amounts of fibrous connective tissue.^[1] Fibroids usually arise in the myometrium but may occasionally be found in the cervix, broad ligament or ovaries.^[1,2] They are multiple in up to 84% of women.^[3] Fibroids have been reported to occur in up to 70% of women by the age of 50 years^[4] and are especially common in black women, who also often have more severe disease.^[4,5]

These benign tumors are hormone dependent, responding to both estrogen and progesterone^[6]; they often increase in size during pregnancy and usually decrease in size after menopause. Early age at menarche and obesity are risk factors for the development of fibroids, likely due to the increased exposure to estrogen.^[7]

The majority of women with fibroids are asymptomatic; however, 20–50% of them have symptoms such as menorrhagia, pelvic pain and infertility, or complications during pregnancy.^[8–10] A large fibroid can present as an abdominal mass or with symptoms secondary to mass effect, e.g., constipation and urinary frequency or retention. Rarely, the patient may present with hydronephrosis or bowel obstruction.^[11]

The presence of symptomatic fibroids is the commonest indication for hysterectomy, accounting for approximately one-third of those performed.^[12] Traditionally, treatment has been surgical but, in recent years, treatment with uterine artery embolization (UAE) has been increasingly performed and has been shown to be an effective alternative to traditional surgery.^[12,13]

Other treatment options include myomectomy or administration of gonadotrophin-releasing hormone (GnRH) analogs.^[12,14] A relatively new noninvasive technique for treating fibroids is MRI-guided focused ultrasound ablation, which targets high energy ultrasound waves onto a fibroid, leading to localized heating and subsequent cell death.

MRI is the preferred imaging modality for characterizing uterine fibroids and identifying their exact anatomical location, though initial identification is usually by USG. Often, fibroids may also be found incidentally on plain radiographs or CT scans done for other indications.

IMAGING CHARACTERISTICS:

Plain radiography: Fibroids are usually only identified on plain radiographs if they are calcified and sometimes large fibroids may be seen as soft tissue or calcified masses displacing bowel gas

USG: USG is usually the initial investigation for examining the female pelvis. Ideally, both transabdominal (TA) and transvaginal (TV) scans should be performed. Transvaginal scans are more sensitive for the diagnosis of small fibroids; however, when the uterus is bulky or retroverted, the uterine fundus may lie outside of the field of view. Trans abdominal views

are often of limited value if the patient is obese. Ultrasonography is highly operator dependent and in skilled hands, fibroids as small as 5 mm can be demonstrated on TV USG.

CT Scan: CT scan is not the investigation of choice for the characterization of pelvic masses. Uterine fibroids are often seen incidentally on CT scans performed for other reasons. The typical finding is a bulky, irregular uterus or a mass in continuity with the uterus. Degenerate fibroids may appear complex and contain areas of fluid attenuation.

Calcification is seen in approximately 4% of fibroids^[15] and is typically dense and amorphous.

MRI: MRI is the preferred method for accurately characterizing pelvic masses. It has been shown to be more sensitive in identifying uterine fibroids than USG,^[16,17] it does not involve the use of ionizing radiation, and it can readily demonstrate the uterine zonal anatomy. Submucosal, intramural and subserosal fibroids are usually easily differentiated with MRI, and fibroids as small as 5 mm in diameter can be demonstrated. Fibroids in relatively unusual locations, such as within the cervix, can also be identified

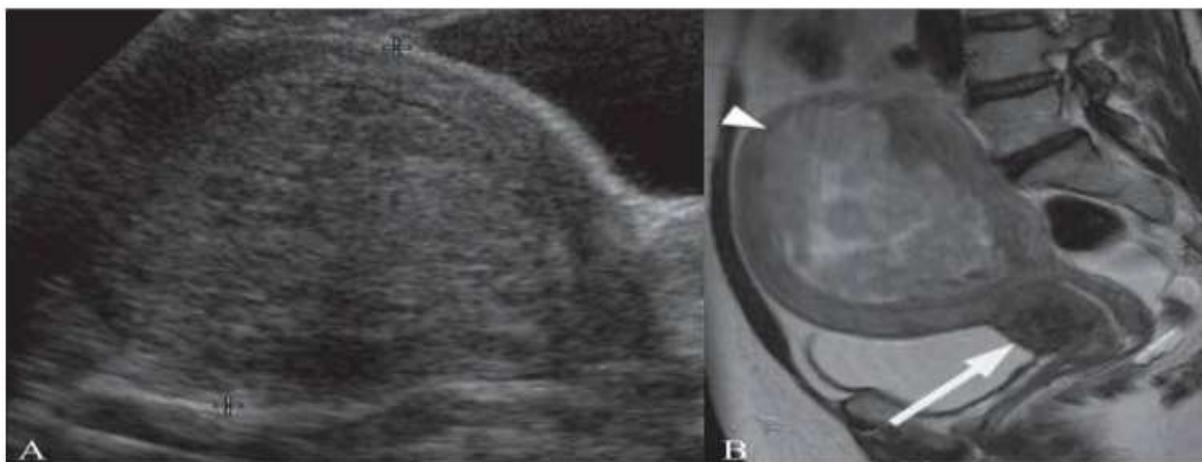


Image no: 1 Transabdominal (TA) USG image (A) shows a submucosal fibroid Sagittal T2W MRI image (B) in the same patient shows that the submucosal fibroid



Image no: 2 Sagittal T2W MRI (A) shows an 18-cm, broad-based, subserosal fibroid

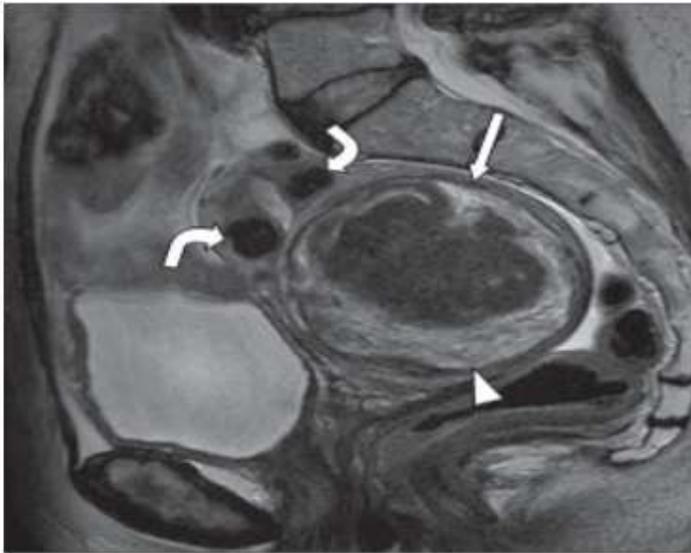


Image no: 3 Sagittal T2W MRI image shows a 7-cm intramural fibroid



Image no:4 USG submucosal fibroid

AIM & OBJECTIVE

Study clinical profile of uterine fibroids and radiological appearance of uterine fibroids.

MATERIAL AND METHODS

Study design: Cross sectional study.

Study setting: Department of Radiodiagnosis, National institutes of medical sciences Jaipur, Rajasthan, India.

Study duration: 10 January 2023 to 11 January 2024

Study population: All patients coming to our institute during study period according to exclusion and inclusion criteria

Sample Size: 100

Inclusion criteria

1. All female patients admitted in OBGY department referred to radiodiagnosis department for fibroid diagnosis.

Exclusion criteria

1. Diagnosis other than fibroid
2. Contrast allergy
3. Implant cases

Approval for the study:

Written approval from Institutional Ethics committee was obtained beforehand. Written approval of Radiodiagnosis and other related department was obtained. After obtaining informed verbal consent from all patients with the fibroids admitted to OBGY ward referred to radiodiagnosis department for investigation such cases were included in the study.

Sampling technique

Convenient sampling technique used for data collection.

Methods of Data Collection and Questionnaire:

Predesigned and pretested questionnaire was used to record the necessary information. Questionnaires included general information, such as age, sex, Medical history-chief complain, past history, general examination, systemic examination. Detailed Menstrual history, Radiological findings noted in proforma.

Data entry and analysis:

The data were entered in Microsoft Excel and data analysis was done by using SPSS demo version no 21 for windows. The analysis was performed by using percentages in frequency tables and $p < 0.05$ was considered as level of significance using the Chi-square test

RESULT AND OBSERVATIONS

This cross sectional study was conducted among 100 cases of fibroids admitted in OBGY department referred to radiodignosis department for investigation during study period

Table No.1: Distribution of case as per age (n=100)

Age (in Years)	Frequency	Percentage
18-25	2	2%
26-35	17	17%
36-45	35	35%
46-55	29	29%
56 and above	17	17%
Total	100	100%

Above table shows that, majority of cases were from 36-45 years age group 35 cases followed by 29 cases in 46-55 years age group, 17 cases in 26-35 years group and 2 cases in 18-25 years age group.

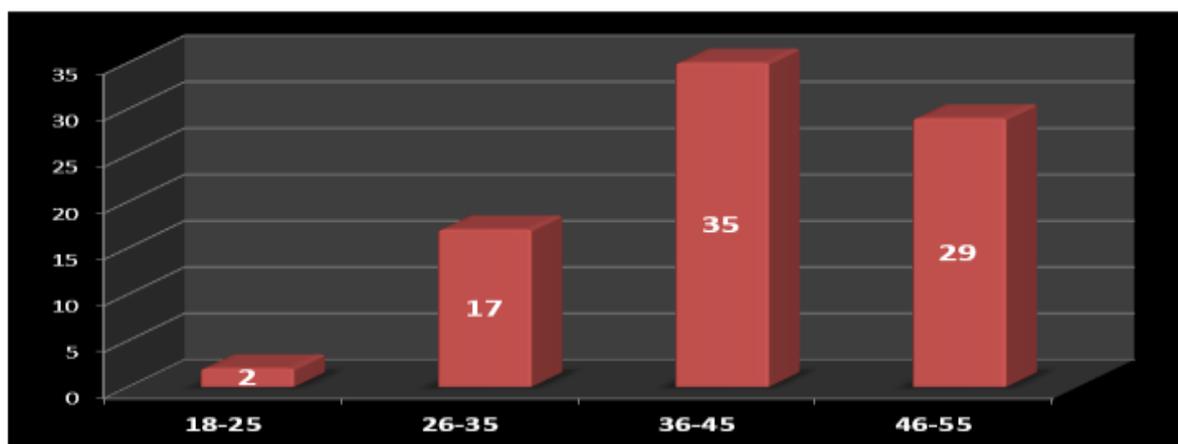


Figure No.1: Distribution of case as per age (n=100)

Table No.2: Distribution of case as per clinical features (n=100)

Clinical features	Frequency	Percentage
Heavy menstrual bleeding	77	77%
Pain	38	38%
Infertility	08	08%
Pain during intercourse	11	11%
Enlarged abdomen	03	03%

The above table shows most of the cases complained heavy menstrual bleeding 77 followed by pain found in 38 cases, pain during intercourse 11 cases, infertility in 8 cases and 3 cases presented with enlarged abdomen.

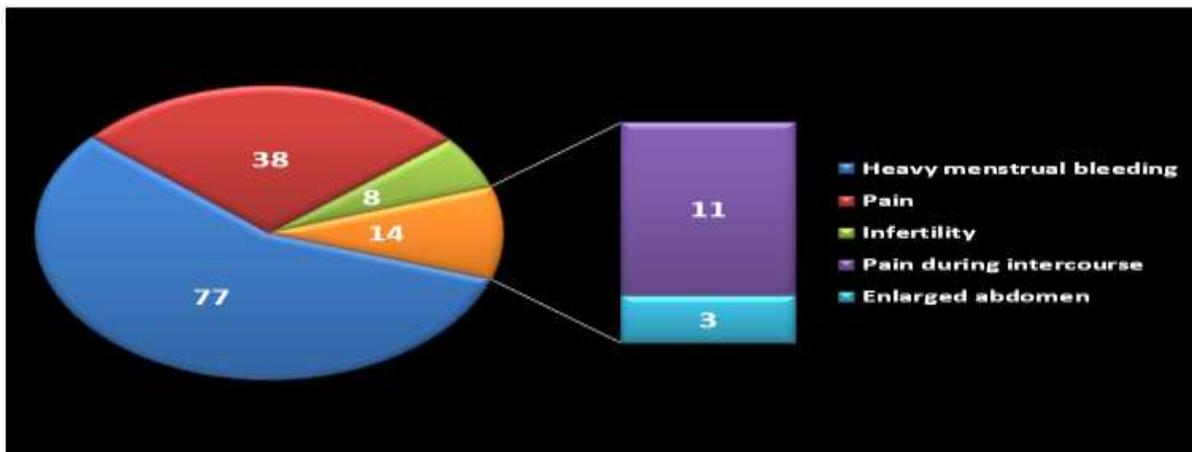


Figure No. 2: Distribution of case as per clinical features (n=100)

Table No.3: Distribution of case as per Radiological diagnosis (n=100)

Radiological diagnosis	Frequency	Percentage
Intramural fibroids	67	67%
Subserosal fibroids	14	14%
Pedunculated fibroids	08	08%
Submucosal fibroids	11	11%
Total	100	100%

The above table shows majority of cases diagnosed with intramural fibroids 67 cases followed by subserosal fibroids 14, pedunculated fibroids found in 8 cases and 11 cases presented with submucosal fibroids.

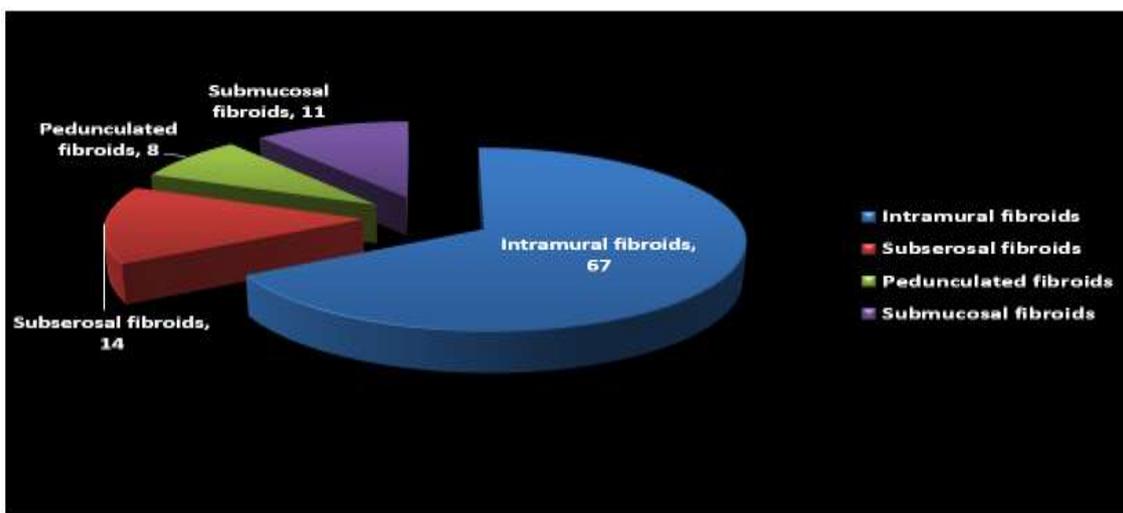


Figure No.3: Distribution of case as per Radiological diagnosis (n=100)

Table No.4: Distribution of case as per Radiographic features (n=100)

Radiology Imaging	Radiographic features	Percentage
USG	Plan radiograph	10
	Hypoechoic	32
	Isoechoic	26
	Hyperechoic	29
	Echogenic foci with	13

	shadowing	
CT	Soft tissue density lesions and may exhibit coarse peripheral or central calcification.	100
	Distort the usually smooth uterine contour	100
MRI	T1 low to intermediate signal intensity compared with the normal myometrium.	80
	Irregular, T1 hyperintense rim around a centrally located myoma.	11
	Fibroids with cystic degeneration appearing as high T2 signal	07
	T1 C+ (Gd) the marked high signal intensity with gradual enhancement	02
Total		100%

The above table shows radiographic features plan radiograph shows Popcorn calcification in 10 cases, USG findings Hypoechoic 32, Isoechoic 26, Hyperechoic 29, Echogenic foci with shadowing 13. CT findings Soft tissue density lesions and may exhibit coarse peripheral or central calcification 100, Distort the usually smooth uterine contour 100. MRI findings T1 low to intermediate signal intensity compared with the normal myometrium 80, Irregular, T1 hyperintense rim around a centrally located myoma 11, Fibroids with cystic degeneration appearing as high T2 signal 7 and **T1 C+ (Gd)** the marked high signal intensity with gradual enhancement 2.

DISCUSSION

This cross sectional study was conducted among 100 cases of fibroids admitted in OBGY department referred to radiodiagnosis department for investigation during study period

In current study majority of cases were from 36-45 years age group 35 cases followed by 29 cases in 46-55 years age group, 17 cases in 26-35 years group and 2 cases in 18-25 years age group. Hutchins FL^[9] he reported that the most of the cases found in above 40 years age group.

In current study most of the cases complained heavy menstrual bleeding 77 followed by pain found in 38 cases, pain during intercourse 11 cases, infertility in 8 cases and 3 cases presented with enlarged abdomen. Similar result observed in the study conducted by Hutchins FL^[9] he reported that the most common complaint was heavy menstrual bleeding followed by infertility. Wallach EE *et al.*^[12] he reported that the most common clinical features heavy menstrual bleeding.

In current study majority of cases diagnosed with intramural fibroids 67 cases followed by subserosal fibroids 14, pedunculated fibroids found in 8 cases and 11 cases presented with submucosal fibroids. Okamoto Y *et al.*^[18] he reported that the most of the cases was intramural fibroids.

In present study radiographic features plan radiograph shows Popcorn calcification in 10 cases, USG findings Hypoechoic 32, Isoechoic 26, Hyperechoic 29, Echogenic foci with shadowing 13. CT findings Soft tissue density lesions and may exhibit coarse peripheral or central calcification 100, Distort the usually smooth uterine contour 100.

MRI findings T1 low to intermediate signal intensity compared with the normal myometrium 80, Irregular, T1 hyperintense rim around a centrally located myoma 11, Fibroids with cystic degeneration appearing as high T2 signal 7 and T1 C+ (Gd) the marked high signal intensity with gradual enhancement 2.

CONCLUSION

Majority of cases were from 36-45 years age group, most of the cases complained heavy menstrual bleeding, majority of cases diagnosed with intramural fibroids, Uterine fibroids are common tumors and although benign they can be associated with significant morbidity. They may be encountered incidentally when performing imaging for other reasons and are usually easily recognizable. However, degenerate fibroids can have unusual appearances. Awareness of the various appearances enables a prompt diagnosis and can guide treatment.

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