



ORIGINAL RESEARCH PAPER

Radiodiagnosis

RADIOLOGICAL APPEARANCES AND LOCATIONS OF UTERINE LEIOMYOMA.

KEY WORDS:

Dr. Sanjay Pasoria

DY Patil Deemed to be University School of Medicine, Navi Mumbai

Dr. Pratik Patil*

D Y Patil Deemed to be University School of Medicine, Navi Mumbai
*Corresponding Author

Dr. Divya Bharatkumar Desai

DY Patil Deemed to be University School of Medicine, Navi Mumbai

Dr. Thahir Vu

DY Patil Deemed to be University School of Medicine, Navi Mumbai

Dr. Rohan Sawant

DY Patil Deemed to be University School of Medicine, Navi Mumbai

Dr. Madan Manmohan

DY Patil Deemed to be University School of Medicine, Navi Mumbai

ABSTRACT

Uterine fibroids, also known as leiomyomas, are the commonest uterine neoplasms arise from the overgrowth of smooth muscle and connective tissue in the uterus. Most leiomyomas are asymptomatic, but patients may present with abnormal uterine bleeding or bulk-related symptoms. They are often discovered incidentally when performing imaging for other reasons. They primarily affect women of reproductive age, and the estimated incidence of fibroids is over 20-30 % in women more than 30 years and 70% by 50 years of age. Although benign, they can be associated with significant morbidity and are the commonest indication for hysterectomy. Usually first identified with USG, they can be further characterized with MRI. They are usually easily recognizable, but degenerate fibroids can have unusual appearances. Leiomyomas are classified as submucosal, intramural, or subserosal. Submucosal and subserosal leiomyomas may be pedunculated, thus simulating other conditions. In this article, we describe the appearances of typical and atypical uterine fibroids, unusual fibroid variants. Knowledge of the different appearances of fibroids on imaging is important as it enables prompt diagnosis and thereby guides treatment.

INTRODUCTION:

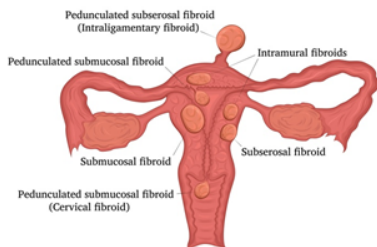
Leiomyomas (fibroid) are the most common neoplasm of uterus and reported to occur in 20-30 % in women more than 30 years and 70% by 50 years of age. These tumors are usually multiple and causing enlargement of the uterus and surface lobularity, unlike adenomyosis which cause globular but smooth contoured uterine enlargement. Leiomyomas are classified as submucosal, intramural, or subserosal. It may be intra-cavitary or exophytic or pedunculated. On a rare occasions, the exophytic fibroid can project in to the broad ligament (intraligamentous).

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.

AIMS AND OBJECTIVES:

- Aim is to differentiate various types of uterine fibroids on ultrasound.
- To determine the origin and anatomical location of fibroids.
- Differentiation of leiomyomas with other neoplastic uterine lesions.
- To determine the origin, tissue content and characterization of sonographically inconclusive uterine and adnexal masses

Types of uterine fibroids



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. 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. The presence of symptomatic fibroids is the commonest indication for hysterectomy, accounting for approximately one-third of those performed. Traditionally,

METHODS:

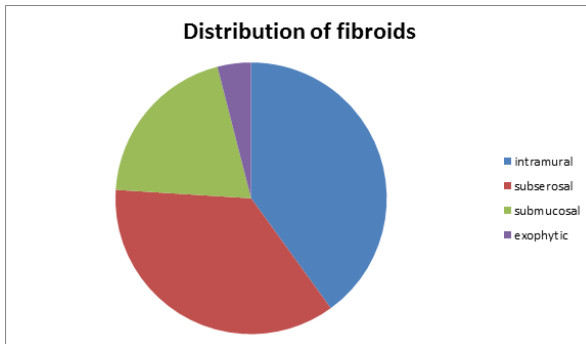
- Prospective study will be conducted in Department of Radiology, Dr. DY Patil Medical College, Hospital and Research Centre, Nerul, Navi Mumbai.
- 50 patients formed the study population.
- After taking consents of all patients suspected with pelvic masses, underwent the ultrasonography. The result of ultrasound is correlated with histopathological and operative findings. Appropriate MRI sequences and multiplanar imaging will be performed for every patient. Contrast study was performed in indicated. This was followed by T1W in sagittal planes; T2W - axial, coronal & sagittal planes; STIR - axial, coronal & sagittal planes, T1FS - Coronal & axial planes and T2FS in axial & sagittal planes. DIFFUSION and MERGE sequences if needed.

DISCUSSION:

Uterine leiomyoma are classified according to their location as submucosal, intramural or subserosal. Submucosal

leiomyoma are the least common type, accounting for just 5% of all leiomyoma, but they are the most likely to be symptomatic since they project into the endometrial cavity. Submucosal leiomyoma can occasionally become pedunculated and prolapse into the cervical canal or vagina. Intramural leiomyoma are the most common type, but they are usually asymptomatic; however, they may cause infertility due to compression of the fallopian tubes. Subserosal leiomyoma, project exophytically into the abdomen or pelvis and can also become pedunculated, which may be confused with ovarian tumors. Pedunculated subserosal leiomyoma can undergo torsion and consequent infarction and thus be a cause of severe abdominal pain. Large leiomyoma often degenerate as they outgrow their blood supply. The various types of degeneration include hyaline, myxoid, cystic and red degeneration. Calcification tends to occur following necrosis. On ultrasound, uterus may be heterogenous and globular in contour, which overlaps with the appearance of adenomyosis. Typically, leiomyomas appear as well-defined, solid masses with a whorled appearance. These are usually of similar echogenicity to the myometrium, but sometimes may be hypoechoic. They cause the uterus to appear bulky or may cause an alteration of the normal uterine contour. Focal leiomyomas are usually heterogenous but mostly hypoechoic when compared with the surrounding myometrium. The heterogeneity increases as the leiomyomas evolve through various changes such as growth, increased fibrosis, degeneration and calcification. Many demonstrate areas of characteristic acoustic attenuation. This attenuation is believed to be due to transitional zone between the adipose tissue such as fibrous tissue and smooth muscle, the margins of the leiomyoma with the adjacent normal myometrium and the edges of whorls and bundles of smooth muscle. Dystrophic calcification occurs in the postmenopausal women. The calcifications are curvilinear, with dense shadowing. Even noncalcified fibroids often show a degree of posterior acoustic shadowing, though this is of course more marked in calcified fibroids. Degeneration may produce cystic changes, or edema with multiple cystic spaces.

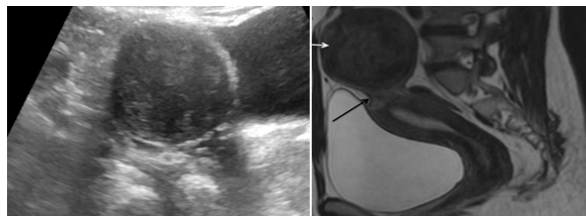
On MRI pelvis it appears as inhomogeneous well defined mass on T2W images with no or minor enhancement on post contrast study.



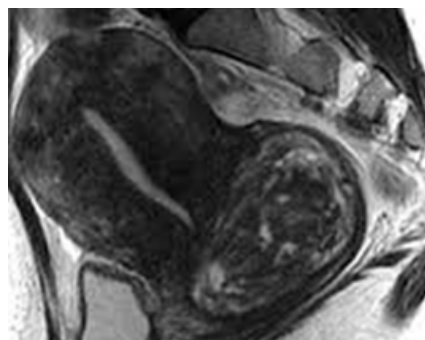
IMAGING FINDING:



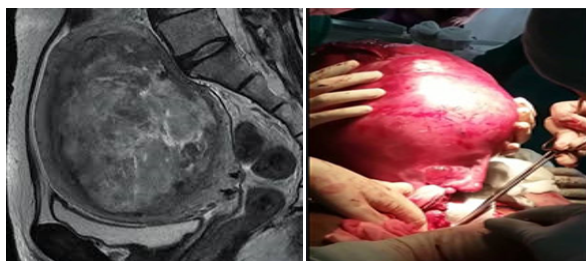
Case: 1 – on USG large well defined hypoechoic lesion is noted in the endometrial cavity, ON T2W MRI large well defined hypointense lesion is noted in the endometrial cavity ----- **SUBMUCOSAL FIBROID.**



Case: 2 – on USG large well defined hypoechoic lesion is noted arising from the uterine wall, ON T2W MRI large well defined hypointense lesion is noted arising from the uterine wall ----- **SUBSEROSAL FIBROID.**



Case: 3 – MRI T2W image: heterogeneously hypointense lesion is noted with few hyperintense areas within in the cervix ----- **CERVICAL FIBROID.**



Case: 4 – MRI T2W image: heterogeneously hypointense lesion is noted with few hyperintense areas within (on right). Large fibroid is seen at the hysterectomy (on left) ----- **LARGE INTRAMURAL UTERINE FIBROID WITH CYSTIC DEGENERATION.**

Leiyomyoma Subclassification System	SM – submucosal	0 – Other	Hybrid leiomyomas (impact both endometrium and serosa)
	0	Pedunculated intracavitary	Two numbers are listed separated by hyphen. By convention, the first refers to the relationship with the endometrium while the second refers to the relationship to the serosa. One example is below
	1	< 50% intramural	
	2	≥ 50% intramural	2-5 Submucosal and subserosal, each with less than half the diameter in the endometrial and peritoneal cavities, respectively
	3	Contacts endometrium; 100% intramural	
	4	Intramural	
	5	Subserosal ≥ 50% intramural	
	6	Subserosal < 50% intramural	
	7	Subserosal Pedunculated	
8	Other (specify e.g. cervical, parasitic)		

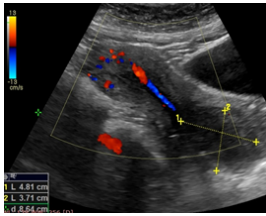
FIGO CLASSIFICATION

RESULTS:

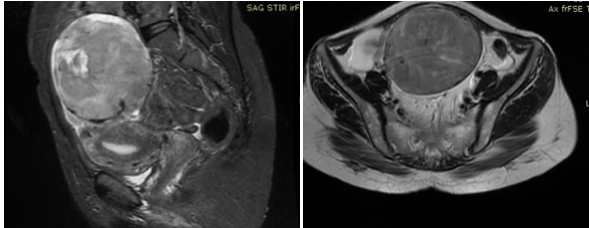
Distribution of uterine fibroids:

Most common uterine fibroid is intramural fibroid followed by subserosal fibroid followed by submucosal fibroid as per our study.

Lesions	No of patient	%
Intramural fibroid	20	40
Subserosal fibroid	18	36
Submucosal fibroid	10	20
Exophytic fibroid	02	04
Total	50	100



Case: 5 – USG: Heterogeneously hypoechoic lesion is noted in the cervical canal with vascular peduncle , there is prolapsed of large submucosal fibroid into cervical canal ----
PROLAPSE OF LARGE SUBMUCOSAL FIBROID



Case: 6 –T2W Sagittal & STIR - large well defined exophytic hyperintense lesion is noted in the pelvis from which bilateral ovaries seen separately. Fat planes with uterus is well maintained. The lesion is seen abutting the fundus of uterus ---
-- BROAD LIGAMENT FIBROID

CONCLUSION:

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.

REFERENCES:

1. Lethaby A, Vollenhoven B. Fibroids (uterine myomatosis, leiomyomas) BMJ Clin EVID. 2015
2. Peddada Sd, Laughlin SK, Miner K, et al. Growth of uterine leiomyomata among premenopausal black and white women. Proc Natl Acad Sci USA. 2008;105:19887.
3. Callen PW, editor. Ultrasonography in Obstetric and Gynecology. 5th ed. Philadelphia:Saunders Elsevier;2007.
4. Frank ML, Schafer SD, Mollers M, et al. Importance of Transvaginal Elastography in the Diagnosis of Uterine Fibroids and Adenomyosis. Ultraschall Med. 2016;37:3738.
5. Rashid SQ, Chou YH, Tiu CM, et al. Ultrasonography of uterine leiomyomas. J Med Ultrasound. 2016;24:3e12.
6. Sauerbrel EE, Nguyen KT, Nolan RL, et al. A Practical Guide to Ultrasound in Obstetrics and Gynecology. 2nd ed. Philadelphia:Lippincott-Raven; 1998. pp. 52–58.
7. Prayson RA, Hart WR. Pathologic considerations of uterine smooth muscle tumors. Obstet Gynecol Clin North Am. 1995;22:637–57.
8. Erdemoglu E, Kamaci M, Bayram I, Güler A, Güler SH Primary giant leiomyoma of the ovary – case report. Eur J Gynaecol Oncol. 2006;27:634–5.
9. Cramer SF, Patel A The frequency of uterine leiomyomas. Am J Clin Pathol. 1990;94:435–8.
10. Day Baird D, Dunson DB, Hill MC, Cousins D, Schectman J. High cumulative incidence of uterine leiomyoma in black and white women: Ultrasound evidence. Am J Obstet Gynecol. 2003;188:100–07.