



A Retrospective Study Of Broad Ligament Fibroids On Ultrasonography And Computed Tomography Scan.

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ABSTRACT

Background:

Among the extrauterine fibroids, broad ligament fibroids are most common to occur although its overall incidence being rare. Because of its rarity it poses specific diagnostic difficulties causing an error in making the final diagnosis and therefore the management. A huge degenerated broad ligament fibroid can mimic adnexal mass on clinical examination and at imaging so extrauterine leiomyoma should be kept in the differential diagnosis of adnexal mass.

Materials and Methods:

A retrospective study was conducted from December 2012 to November 2022 in MVJ Medical College by a computer-assisted search of the reports of pre-operative ultrasonographic and computed tomography images of all the patients who underwent surgery for suspected broad ligament fibroids were reviewed. A total of 10 such cases were found and included in the study.

Results:

5 (50 %) were in the age group of 30 to 40 years, 3 (30%) patients were in the age group (below 30 years) and 2 (20%) were in the age group (above 40 years).

Six lesions (60 % of the cases) were seen in left adnexa and four lesions (40% of the cases) were seen in right adnexa.

Four of the patients were clinically presented as mass per abdomen associated with lower abdominal pain. Three of the patients were presented with pain abdomen. Three of the patients were asymptomatic.

On ultrasonography six of the lesions were solid, well-defined and hypoechoic in echotexture, three lesions were heterogenous in echotexture and showed cystic areas within and one large lesion showed mixed echogenicity, multiple thick septations with solid cystic components.

On NCCT six lesions showed soft density and four lesions showed mixed density. On CECT six lesions showed mild homogenous enhancement, three lesions showed heterogenous enhancement with central non enhancing areas and one lesion showed mixed density with enhancing thick septa and solid components.

Conclusion:

Broad ligament fibroid is a type of extrauterine fibroid occur infrequently, may mimic malignant adnexal tumours at imaging, and present a diagnostic challenge. So, the main role of imaging is to differentiate it from a possible pedunculated subserosal fibroid or ovarian tumour.

Key words: Broad ligament fibroid, Ultrasound, Computed Tomography.

INTRODUCTION:

Leiomyoma is the commonest benign tumour of female pelvis being present in 20–30% of female in reproductive age group. They commonly arise from uterus and cervix but can arise from any extrauterine sites such as broad ligament, urethra, urinary bladder, vulva or vagina [1].

Among the extrauterine fibroids, broad ligament fibroids are most common to occur although its overall incidence being rare (less than 1%) [2]. Because of its rarity it poses specific diagnostic difficulties causing an error in making the final diagnosis and therefore the management. Broad ligament fibroid is said to be true (20%) when it arises from the smooth muscle fiber of broad ligament itself and false (80%) if arises

from uterine wall and grows laterally into the broad ligament. They can be single or multiple and size can vary from subcentimetric to term size uterus [3].

Broad ligament fibroid can be asymptomatic or present with pelvic mass, lower abdomen pain and pressure symptoms of bladder and bowel like urinary outflow obstruction, and secondary hydronephrosis.

Imaging characteristics are similar to intra-uterine leiomyomas. However, the clinical and imaging features depend on the growth pattern of the lesion.

The differential diagnosis for broad ligament fibroids includes masses of ovarian origin (both primary neoplasms and metastasis), broad ligament cyst, pedunculated subserosal leiomyoma, pelvic neurofibroma and lymphadenopathy.

AIMS AND OBJECTIVES:

To have brief understanding of broad ligament fibroid and to consider as differential diagnosis in cases of pelvic masses.

MATERIALS AND METHODS:

A retrospective study was conducted from December 2012 to November 2022 in MVJ Medical College by a computer-assisted search of the reports of pre-operative ultrasonographic (USG) and computed tomography images of all the patients who underwent surgery for suspected broad ligament fibroids were reviewed. A total of 10 such cases were found and included in the study.

Ultrasonography was performed using GE Voluson E6 machine. For initial survey of the abdomen and pelvis a low frequency curved array transducer probe was used and then high frequency transvaginal probe was used.

The study of the patients was done using GE Brivo 16 slice CT scanner and after eliminating all artifacts from the scanning area. Firstly, a scout view was obtained of the abdomen and pelvis region with 100 kvp and 60 mA as voltage and current. Plain CT images were obtained from the dome of the liver to the level of the perineum. Voltage and current settings of 120 kvp and 200 mA were used respectively. Axial images with section thickness of 5 mm were obtained and reconstructed in multiplanar coronal and sagittal planes using thin sections of 1.2 mm. For dual-phase contrast-enhanced CT, 1ml/kg body weight of iodinated contrast material namely Iohexol injection (300 mg I/ml) was administered IV at a rate of 3.5 mL/s, scans were obtained with delay time of 35-40 seconds for arterial phase and 80-100 seconds for venous phase respectively.

INCLUSION CRITERIA:

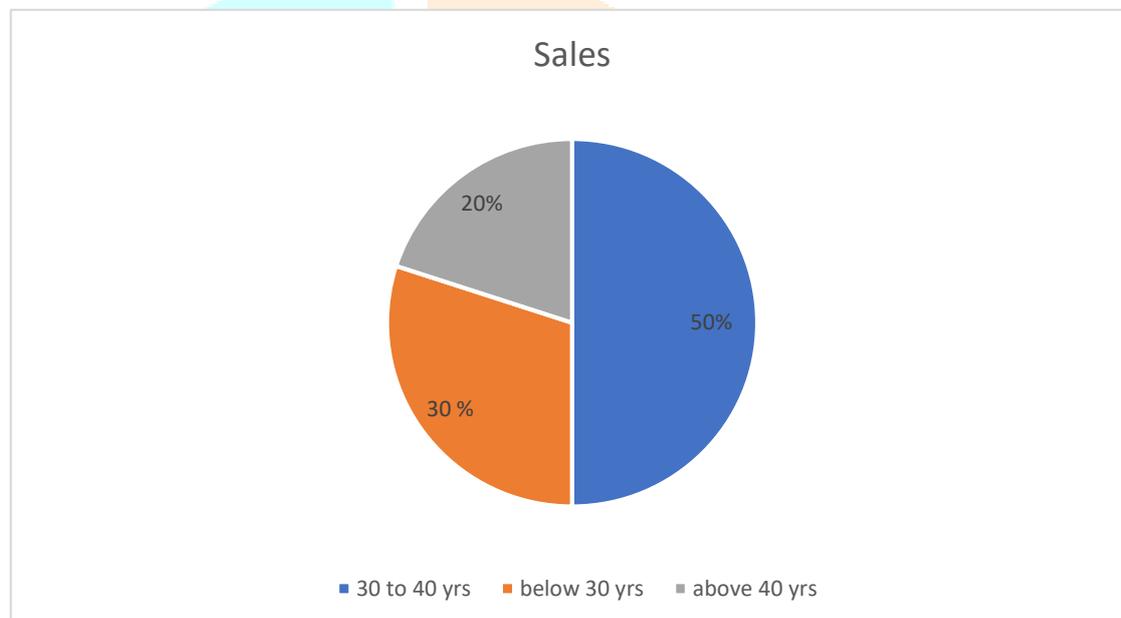
- All patients who underwent surgery for suspected broad ligament fibroids and ovarian malignancy with a pre-operative Ultrasonography and Computed Tomography of the abdomen and pelvis in our institution.

EXCLUSION CRITERIA:

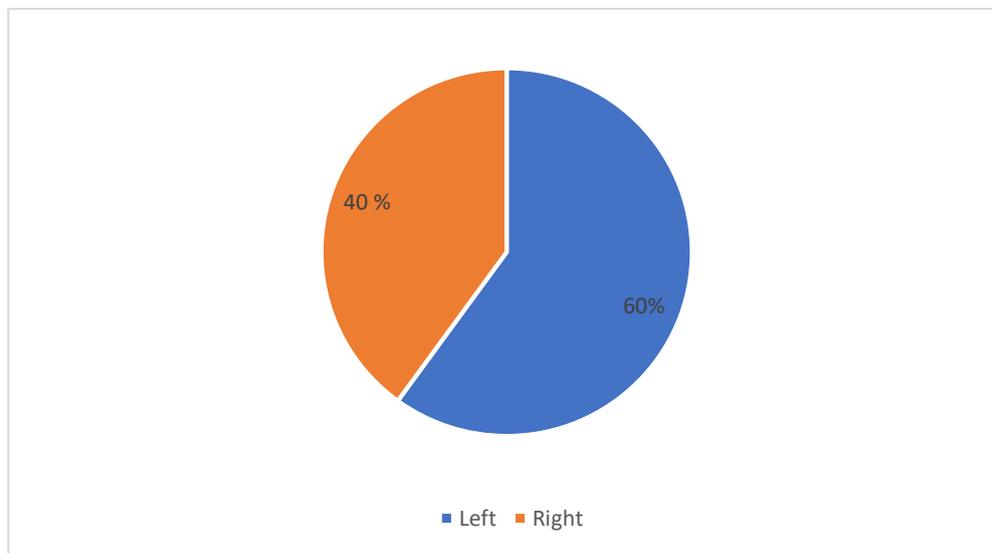
- Patients who were managed conservatively.
- Patients who refused surgery, Ultrasound and Computed Tomography.

RESULTS:

5 (50 %) were in the age group of 30 to 40 years, 3 (30%) patients were in the age group (below 30 years) and 2 (20%) were in the age group (above 40 years).



Six lesions (60 % of the cases) were seen in left adnexa and four lesions (40% of the cases) were seen in right adnexa.



Four of the patients were clinically presented as mass per abdomen associated with lower abdominal pain. Three of the patients were presented with pain abdomen. Three of the patients were asymptomatic.

	Clinical symptoms	No of cases
1	Pelvic mass with pain abdomen	4
2	Pain abdomen	3
3	Asymptomatic	3

On ultrasonography six of the lesions were solid, well-defined and hypoechoic in echotexture, three lesions were heterogenous in echotexture and showed cystic areas within and one large lesion shows mixed echogenicity, multiple thick septations with solid cystic components.

	USG findings	No of cases
1	Hypoechoic lesions	6
2	Heterogenous lesions with cystic areas	3
3	Solid cystic lesion	1

On NCCT six lesions showed soft density and four lesions showed mixed density. On CECT six lesions showed mild homogenous enhancement, three lesions showed heterogenous enhancement with central non enhancing areas and one lesion showed mixed density with enhancing thick septa and solid components.

	CT findings	No of cases
1	Soft density lesion showing homogenous enhancement	6
2	Mixed density lesion showing heterogenous enhancement	4

DISCUSSION:

Leiomyoma is the commonest benign uterine tumour. It occurs in 20–30% of reproductive age group women [1]. Even though the most common site is uterus, it can arise from cervix, from any extrauterine sites such as smooth muscle of broad ligament, round ligament, urethra, urinary bladder, vulva, vagina, uterine vessel and fallopian tube too. Incidence of broad ligament fibroid is <1% [2]. They can be single or multiple and size can vary from subcentimetric to term size uterus. Broad ligament fibroid can be asymptomatic or present with pelvic mass, lower abdomen pain and pressure symptoms of bladder and bowel. All fibroids which attain large size show some form of degenerative changes, the most common being hyaline followed by cystic and myxoid. Usually, they do not pose any diagnostic difficulty and have typical radiological appearance but the degenerated giant myomas can have radiological appearance mimicking ovarian tumor [3].

Occasionally, fibroids become adherent to surrounding structures like the broad ligament, omentum, develop an auxiliary blood supply and lose their original attachment to the uterus. It has also been suggested that fibroids that are adherent to the broad ligament originate from hormonally sensitive smooth muscle elements of that ligament [4].

Imaging characteristics are similar to intra-uterine leiomyomas. However, the clinical and imaging features depend on the growth pattern of the lesion.

Transvaginal ultrasound may be of help in diagnosing broad ligament fibroid because it allows clear visual separation of the uterus and ovaries from the mass [4]. A typical leiomyoma usually has a whorled appearance, with variable echogenicity depending on the extent and type of degeneration and calcification [5].

On Computed tomography they usually seen as soft tissue density lesions and may show coarse peripheral or central calcification. On contrast administration they show variable enhancement pattern.

Magnetic resonance imaging (MRI), with its multiplanar imaging capabilities, useful for differentiating broad ligament fibroids from masses of ovarian or tubal origin and from broad ligament cysts. The distinctive MRI appearances of typical fibroids are also useful in differentiating them from solid malignant pelvic tumors. This observation is important because broad ligament fibroids are associated with pseudo-Meigs syndrome and elevated cancer marker CA-125 levels that may point to metastatic ovarian carcinoma, causing diagnostic confusion. Typical fibroids demonstrate low to intermediate signal intensity on T1-weighted images and low signal intensity on T2-weighted images. Variable enhancement is seen with contrast administration. Myxoid degeneration and necrosis may be visible as high signal intensity areas on T2-weighted images. Myxoid degeneration also show gradual enhancement with contrast administration. Another common variant seen on both T1-weighted and T2-weighted images is a cobblestone-like appearance due to hyaline degeneration, with high signal intensity foci representing areas of infarction due to rapid growth. Hyalinization is the most common type of degeneration occurring in 60% of cases. Cystic degeneration occurs in 4% of cases and is considered an extreme sequel of edema [6]. However, in our study there is higher incidence of cystic degeneration with 30 % of cases.

Kaushik et al.[7] have reported series of two cases of uterine fibroids with cystic degeneration.

Ultrasound-guided percutaneous biopsy of the tumour may be helpful for determining its exact histologic composition before surgery. Cystic lesions in female pelvis most often originate in the ovary. Non-ovarian cystic pelvic lesions may include peritoneal inclusion cysts, paraovarian cysts, mucocele of appendix, hydrosalpinx, subserosal, or broad ligament leiomyomas with cystic degeneration, cystic adenomyosis, cystic degeneration of lymph nodes, hematoma, abscess, spinal meningeal cysts and lymphoceles [8]

CONCLUSION:

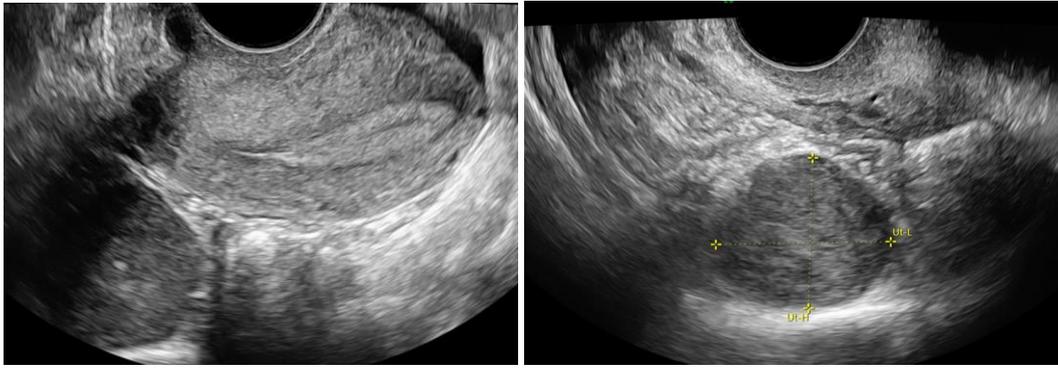
Broad ligament fibroids are extrauterine leiomyomas that occur infrequently can mimic adnexal mass on clinical examination and at imaging so should be considered as differential diagnosis in cases of pelvic masses with normal uterus and ovaries.

The brief understanding of broad ligament fibroid allows prompt and appropriate treatment.

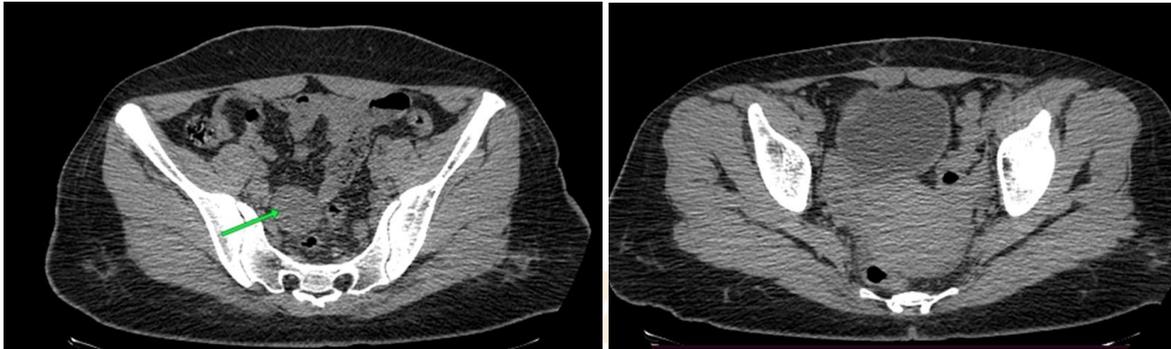
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Case report 1:



Transvaginal Ultrasound Scan images showing a well-defined 3 x 3 cm sized solid hypoechoic lesion in the right adnexa, seen separately from uterus and both ovaries. No internal vascularity present on colour Doppler study.



NCCT Abdomen and Pelvis axial image showing a well - defined soft tissue density lesion measuring 3 x 3 cm in size in right adnexa. Uterus and both ovaries separately from the lesion.



Findings were confirmed intraoperatively. Excision of the lesion in right broad ligament with total hysterectomy and bilateral salpingo-oophorectomy was done.

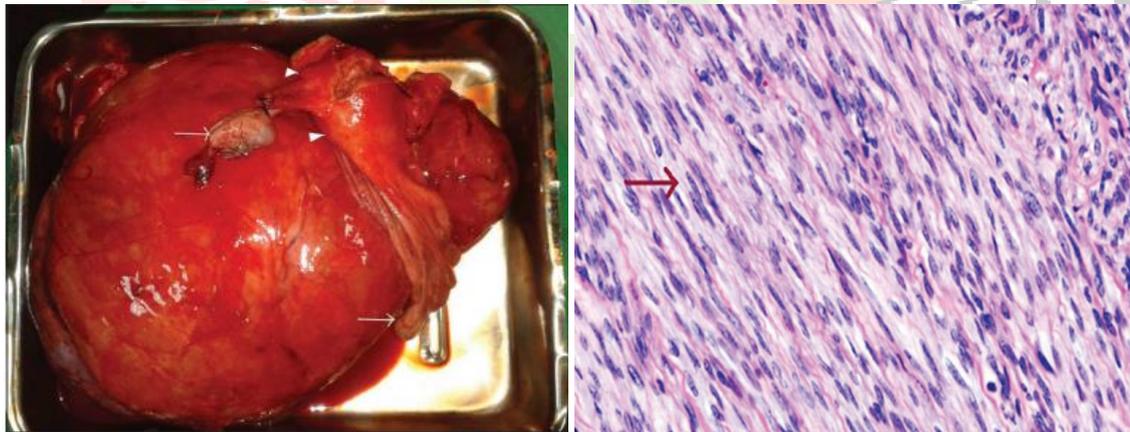
Case report 2 :



Trans-abdominal ultrasonogram shows mixed echogenic, predominantly hyperechoic lesion in pouch of Douglas displacing the uterus (empty arrowhead) anteriorly and cystic (arrow) and solid components (solid arrowhead) within the lesion.



Axial contrast-enhanced computed tomographic scan at a higher level shows thick enhancing septae (arrowheads) and cystic components (arrow).



Gross surgically removed specimen of giant fibroid in the right broad ligament with normal ovaries (arrows) and uterus (arrow head). Microscopic examination of the surgically removed specimen in the broad ligament demonstrated interlacing bundles of smooth muscle cells and scattered thick walled blood vessels.