Ultrasound follow up for Stable fibroadenoma after nine months in young age women: no more evaluation required

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https://doi.org/10.15218/crewh.2024.02

Abstract:

Background and objective: To evaluate the stable fibroadenoma within (9 months) follow-up in patients with breast medical report, after a diagnosis of an image-guided Ultrasonography, to release stress on young age women and discharge.

Methods: A prospective study of 51 cases attended to breast diagnostic center and breast clinic with breast mass (single or multiple) from January 2018 to June 2022. Patients age between 15 to 35 years old women included in this study.

Results: 51 patients (15-35) years of age were included , all participants were classified as Fibroadenoma on Breast Imaging-Reporting from the first visit. Mean size was (14.33 ± 4.81) mm . Upper outer quadrants of the breasts had the greatest number of lesions. US images showed an oval shaped, well defined homogeneous, hypoechoic solid mass of less than 25mm in maximum dimensions and no internal calcification or distal acoustic shadowing were noted. The patients were invited to come back at intervals of three months from first visit and six months from the second visit for clinical examination and follow up breast US.

Conclusions: Our results of US-guided of breast FA provide evidence that the method is promising, efficient and safe. Although after 3 months US treatment session results in stable of FA volume, the 9 months US-guided significantly without changing degree of volume. US-guided may become most sensitive diagnostic modalities of breast FA.

Keywords: Breast, fibroadenoma, ultrasonogram, Unchanged breast mass and Fine Needle

Introduction

Fibroadenomas are the most common breast masses in adolescent females with an overall incidence of about 2.2% [1.] The typical imaging features of fibroadenoma on ultrasound (US) are well known, and in the majority of cases, no further characterization (e.g., histologic/cytologic sampling, breast magnetic resonance imaging (MRI)) is required. [2,3]

A breast fibroadenoma is a painless, uni or bilateral, benign tumor that presents as a solid lump. It commonly occurs in women between the age of 15 to 35 years. This activity illustrates the evaluation and management of breast fibroadenoma and highlights the role of the interprofessional team in improving care for patients with this condition. [4]

Ultrasound (US) uses sound waves to detect the features of fibroadenomas in women younger than 35 years of age. US easily differentiates solid from the cystic masses. On US, a fibroadenoma is typically seen as a well-circumscribed, round to ovoid, or macro lobulated mass with generally uniform hypo echogenicity. If necessary, a minimally invasive biopsy may be performed via a core needle biopsy. [5]

Without treatment, a minority of FA (Fibro adenoma) decreases in size or disappear, more than half of them remain unchanged, and some of them significantly increase [6]. The long-term risk for breast carcinoma in women with FA has not been established [7,] and therefore, a conservative approach to the treatment seems to be safe especially in younger patients [9- 10].

In the term, fibroadenoma "fibro" means the stromal tissue, "adenoma" means the glandular structural in epithelial tissue and "oma" simply means tumor inferring thereby that histologically, fibroadenoma is a benign biphasic tumor with epithelial and stromal components. [11]

Imaging options include mammography, ultrasound, and magnetic resonance imaging (MRI). However, as the patients are generally adolescent, ultrasound is the best option due to the density of the adolescent breast. The characteristic appearance of a fibroadenoma on sonographic evaluation is an ovoid smooth solid mass, narrower in its anteroposterior diameter than its transverse diameter, with even, low-level internal echoes; however, complex presentations that

https://doi.org/10.15218/crewh.2024.02

overlap malignant masses are also detectable including no circumscribed margin, lobulation, presence of a posterior shadow, heterogenicity, and micro calcification [12-13].

This article is to provide an update on diagnosis and the management of breast fibroadenoma in the recent literature.

Methods:

Patient Population: A prospective study done in breast diagnostic center and breast clinic in Erbil city from January 2018-June 2022.

Inclusion criteria were: Occurrence of a short-term, 9-month follow-up with US, performed at our institution. Ages between 15-35 years, mass size 25mm and less, married or unmarried, unilateral or bilateral breast masses, single or multiple masses.

Exclusion criteria were: pregnancy; breast feeding; malignant breast cancer, age below 15and above 35 years old, Change in number of mass and size, All other breast masses with typical criteria for being simple cysts, lipomas, recurrent lesions and Family history of breast cancer.

Data Collection: In all cases, informed consent was obtained for the interventional procedure Ultrasound. Two radiologists, each with 10 years of experience in breast imaging, reviewed all the included cases for modifications of lesion features during follow-up.

Presented either as breast lump or breast pain after taking history and clinical examination, patient refer to do breast ultrasound, those women whom aged 15-35 FA done for them ,after proving typical fibroadenoma, asked the patient to come back after three months, six months and nine months for clinical examination and breast ultrasound,

Ultrasound: All women underwent breast US, performed by a radiologist dedicated to breast imaging. For each lesion, morphology, margins, echogenicity, posterior acoustic shadowing or enhancement, vascularization and size were evaluated.

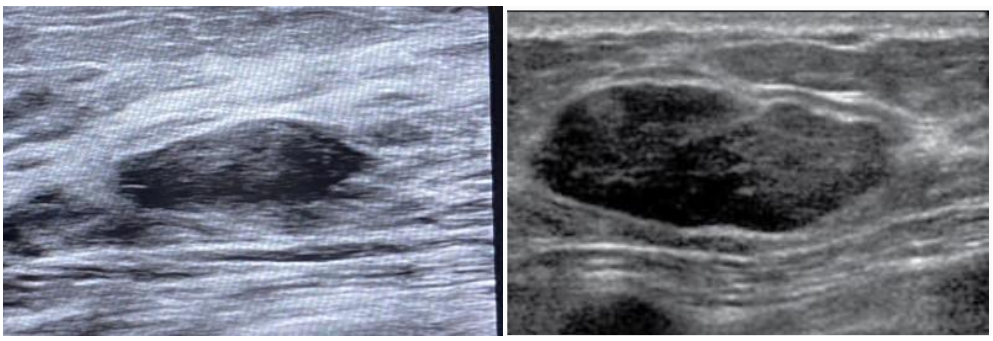
https://doi.org/10.15218/crewh.2024.02

Breast ultrasound examination is typically performed with the patient in a supine position with the ipsilateral arm raised and a pillow placed under the shoulder. Acoustic gel is applied between the transducer and the skin, and the probe is usually moved in a systematic radial fashion toward the nipple, with any identified lesions documented as a position on a clock face in both longitudinal and transverse plane.

The imaging study was performed for all cases by using breast diagnostic ultrasound equipment (Siemens medical solutions USA, Inc. and Samsung model HS40) with 8-12 MHz linear array transducers. Classic imaging features of breast fibroadenoma are as follows:

(1) well-circumscribed lesion, (2) oval shape,(3) homogeneously hypoechoic or isoechoic solid mass, (4)smooth margin (6) parallel to the chest wall (7) no posterior shadowing,(8)no calcification.

Ultrasound image showing anoval shaped, well defined homogeneous, hypoechoic solid mass, less than 25mm in maximum dimensions with a thin, and showing no internal calcification or distal acoustic shadowing.



(Fig. 1) Classic imaging features of breast fibroadenoma.

Results:

A breast mass should have the diagnosis on the basis of the combination of careful clinical examination, imaging and pathological analysis (the triple assessment). Clear communication and reassurance are critical as any breast mass in this patient population will cause significant anxiety to the patient.

https://doi.org/10.15218/crewh.2024.02

History should include age when the breast mass was first noted, changes in the size and texture of the mass, association with the menstrual cycle, associated pain, breast skin changes, nipple discharge and the occurrence of additional masses. The physician should also enquire about the age of menarche, pregnancy history, prior breast mass, radiotherapy, or malignancy, and the family history of breast or ovarian malignancies. Table1. Fig 2 & Fig. 3

Table.1 Demographic sample population of breast cancer.

Variables		No.	%
Age Group (years)	16-25	21	41.2
	26-35	30	58.8
Marital Status	Single	34	66.7
	Married	17	33.3
Complain	Pain	16	31.4
	Lump	34	66.7
	Lump & Pain	1	2.0
Site	Right	24	47.1
	Left	16	31.4
	Both Sides	11	21.6
Single or Multiple	Single	38	74.5
	Multiple	13	25.5
Histopathology	FNA	21	41.2
	Not done	30	58.8

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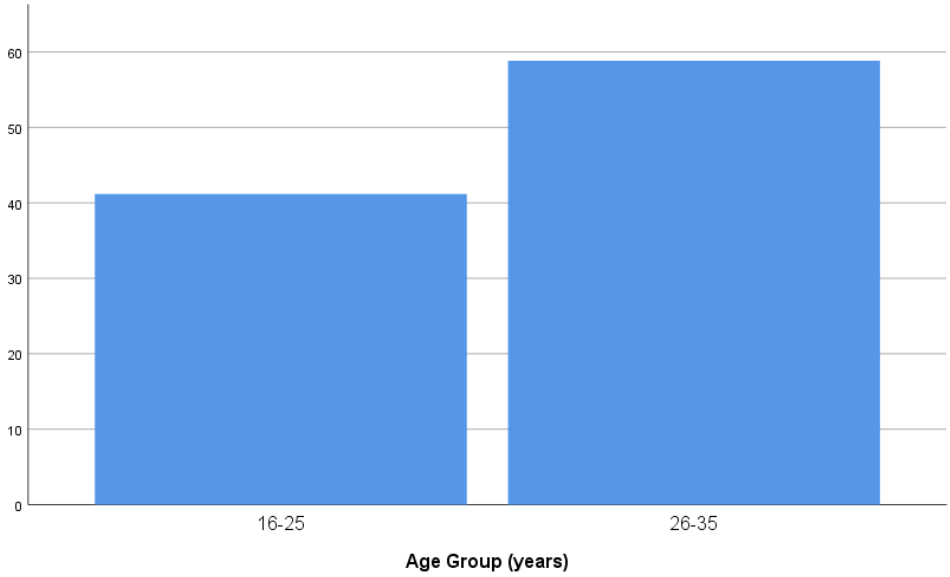

Fig.2: Age Distribution of Masses Assessed as Probable Fibroadenoma.

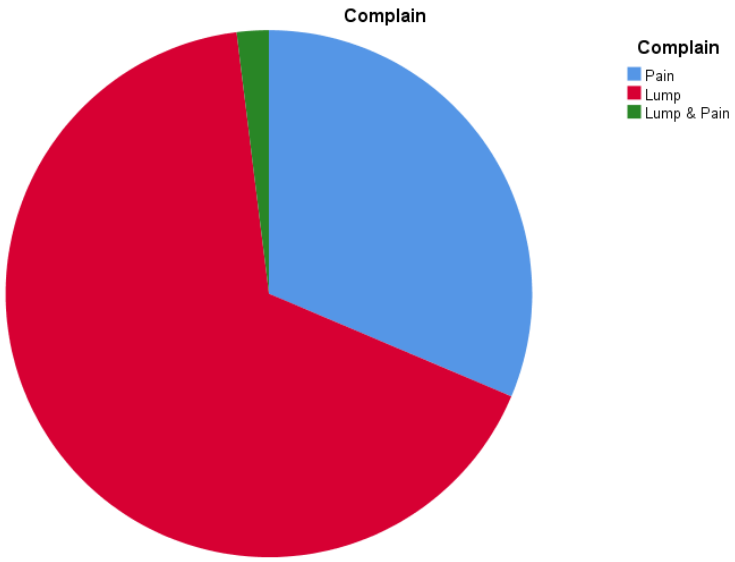

Fig. 3: Pie chart representing distribution of fibro adenomas in breast complain.

Fig. 4 & 5 Physical examination should include a detailed breast examination and palpation of the axillary lymph nodes. For palpable masses, the size, location, consistency, mobility and any

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associated skin changes should be documented. An attempt should be made to express discharge through the nipple.

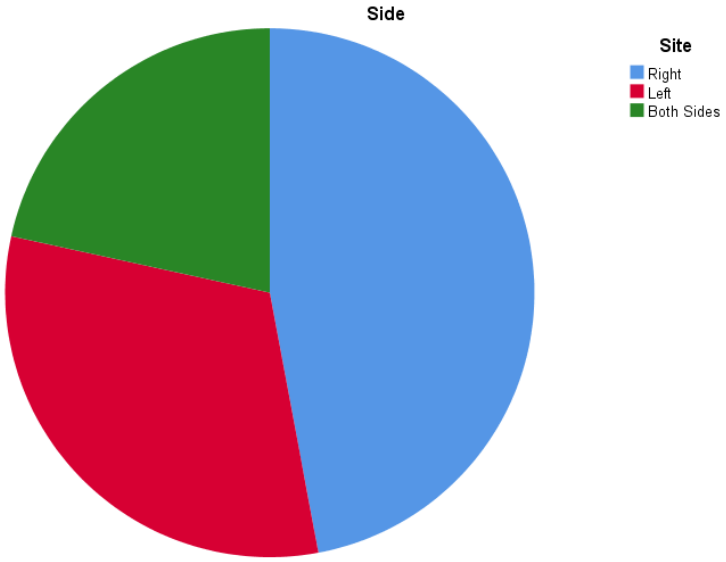

Fig. 4: distribution of fibroadenomas in breast site.

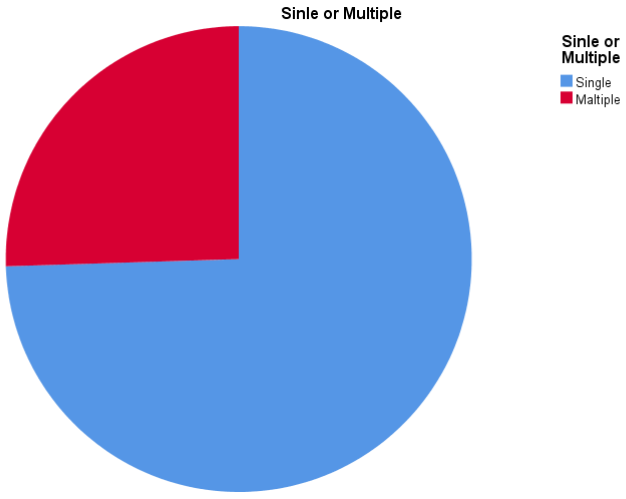

Fig. 5: Pie chart representing distribution of single or multiple fibroadenomas in breast

https://doi.org/10.15218/crewh.2024.02

Evaluated the ultrasound features of fibro adenoma to report the frequent findings of such masses. Table.2&3

Table.2 Baseline features of breast fibro adenomas treated with 1 US for three sessions after 3 months.

Volume of breast (Fibro adenoma) mm				
No.	***First US***	***3 months***	***6 months***	***9 months/ discharge***
1	7mm	same	same	same
2	8mm	same	same	same
3	12mm	same	same	same
4	8mm	same	same	same
5	9mm	same	same	same
6	14mm	same	same	same
7	16mm	same	same	same
8	12 mm	same	same	same
9	11 mm	same	same	same
10	15 mm	same	same	same
11	12mm	same	same	same
12	20mm	same	same	same
13	12mm	same	same	same
14	19mm	same	same	same
15	10mm	same	same	same
16	19mm	same	same	same
17	14 mm	same	same	same
18	17mm	same	same	same
19	10mm	same	same	same
20	15mm	same	same	same
21	15mm	same	same	same
22	16mm	same	same	same
23	10mm	same	same	same
24	12mm	same	same	same
25	23mm	same	same	same
26	19mm	same	same	same
27	18 mm	same	same	same
28	18 mm	same	same	same
29	17mm	same	same	same
30	12mm	same	same	same

https://doi.org/10.15218/crewh.2024.02

31	20mm	same	same	same
32	17mm	same	same	same
33	8mm	same	same	same
34	13 mm	same	same	same
35	5 mm	same	same	same
36	13mm	same	same	same
37	20mm	same	same	same
38	12mm	same	same	same
39	15mm	same	same	same
40	8mm	same	same	same
41	15mm	same	same	same
42	24mm	same	same	same
43	14mm	same	same	same
44	22mm	same	same	same
45	13mm	same	same	same
46	22mm	same	same	same
47	5mm	same	same	same
48	12mm	same	same	same
49	24mm	same	same	same
50	11mm	same	same	same
51	18mm	same	same	same

Table.3 First US (ultrasound) with volume breast fibroadinoma.

First US (n=50)	
Mean	14.33
Median	14.00
Std. Deviation	4.807
Range	19
Minimum size of mass	5
Maximum size of mass	24

Discussion:

https://doi.org/10.15218/crewh.2024.02

Breast masses, as one of the most common indicators of probable breast cancers, particularly in female patients, are the subject of studies that try to define new measures of screening for a faster and safer detection of underlying etiology.[14-15] Here, we evaluated the ultrasound features of fibroadenoma to report the frequent findings of such masses. Table.2

Table.3 our study demonstrates that US-guided machine is effective in diagnosing breast FA as indicated by a significant and stable volume reduction at nine month follow-up, when the mean reduction was 14.33 after one US (Ultrasound), minimum volume 5 mm , maximum volume 24mm and the volume was the same after 3 months and 6 months.

The procedure is safe, with favorable outcome and patient's satisfaction. The significant stable of FA volume as a result of US-guided is consistent with a report based on breast center, study was shown stable volume after nine months follow-up. [16]

In this study show US-guided machine is faster guidance, more comfortable for the patient. [17]

Currently, the accepted definitive of FA is breast-conserving surgery which removes the FA entirely with a subsequent tissue volume defect and risk of complications as bleeding, seroma formation and chronic incisional pain. [18]

It can be performed in case of multiple lesions, in one or both breasts. During the long-term follow-up of our patients, the residual lesions did not demonstrate which cannot be stated for still viable residual tissue after vacuum-assisted percutaneous excision. [19-20]

When the results are not satisfactory after 3 months the FA is still large, which increases with the size of treated FA. Another limitation is one layer treatment, which may result in incomplete ablation. However, the later presumption is not supported by our observation of proportionate reduction of all three FA diameters, but larger studies are needed to evaluate the exact mechanism of FA shrinkage after ablation. Besides, an appropriate patient selection is needed in order to assure the accessibility of the targeted FA.

Whereas deeply lesion may not be accessible to US beam, the superficial FA localization associated with scarcity of subcutaneous fat may result in redness skin as observed of our patients with low BMI. Certainly, the main limitation of the study is the follow up of patients, especially

https://doi.org/10.15218/crewh.2024.02

in the group treated with 3 months, which is mainly due to the recent introduction of the method and lack of previous experience.

Conclusions:

Our results of US-guided of breast FA provide evidence that the method is promising, efficient and safe. Although after 3 months US- Guide session results in stable of FA volume, the 9 months US- Guide significantly without changing degree of size. The US-Guide is sensitive method and well tolerable with patients.

Conflict of Interest: We confirm that there are no conflicts of interest associated with this publication including any financial, personal or other relationship with other people or organizations.

Ethical Approval: The Human Research Ethics Committee (Medical) at the University of Hawler Medical University, as well as all other relevant authorities, including the heads of the departments where the data was collected, gave their approval before the study could be Carried out.

Funding: Not applicable.

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