

# DCIS Breast Arising in a Fibroadenoma - Case Report of an Uncommon Condition

**Keywords:** Case report; Breast cancer; Fibroadenoma

## Abstract

**Introduction:** Fibroadenoma (FA) is a type of benign tumor that occur in young women below the age of 35 years old. The incidence of carcinoma arising with FA is rare with range of 0.002-0.1%. Most cases are detected at an early stage; cases of locally advanced carcinoma with distant metastasis have been published.

**Case presentation:** We present a case of Ductal Carcinoma in situ (DCIS) with microinvasion arising within Fibroadenoma which was being followed for 9 years.

**Discussion:** Fibroadenoma is typically considered to be a type of benign lesion and requires careful observation. However, data regarding whether FA is a risk factor for carcinoma is inconsistent. The present case showed that FAs containing foci of carcinoma *in situ* can be indistinguishable from benign lesions with imaging, therefore, despite the incidence of carcinoma within FA is estimated at 0.002-0.1%, it should be considered a long-term risk factor for invasive breast cancer. Complex FA has a higher risk. High degree of suspicion is needed, as there are limitations in screening, which adds to the problem of delayed diagnosis.

**Conclusion:** The present case was reported to increase awareness that Fibroadenoma in the middle and older age group can harbor cancer; early intervention in this age group is suggested.

## Case Report

This is a 43 year female who was being followed for an image detected lesion (fibroadenoma) in the right breast upper outer quadrant, since age 34 (9 years ago). She had no family history of breast cancer. Initial imaging 9 years ago with Diagnostic mammogram and ultrasound showed a macrolobulated 1.8 cm hypoechoic lesion with a central of calcification in a very dense glandular breast tissue on right side consistent with fibroadenoma BI RADS 3 (Figure 1), interval follow up of 6 months was recommended. Serial imaging with Ultrasound & Mammogram at 6 months showed a hypoechoic 1.5 cm lesion at 9 'o'clock position with a calcification consistent with fibroadenoma (Figures 2-5). She was seen again in a year's time with similar findings and was given BI RADS 2, annual follow up was recommended. She had a very glandular and dense breast, making the interpretation difficult and was BI RADS 2 or BI RADS 3 at times. The patient did not follow up consistently on a regular basis in between for 2 years and had imaging at outside center. She was seen again and Ultrasound/Diagnostic mammogram showed macro lobulated lesion with central calcification.. After 9 years of follow up, surveillance mammogram showed no change in the size of the mass, but increased number of faint polymorphic micro calcifications BIRADS 0 warranting biopsy (Figures 6-9). Ultrasound guided biopsy showed ductal carcinoma in situ, with areas of micro invasion. She underwent needle localized partial mastectomy and Sentinel lymph node biopsy. The size was 0.5 cm (pT1mic) and lymph node negative (pN0) (Figure 10). Tumor was estrogen and progesterone receptor

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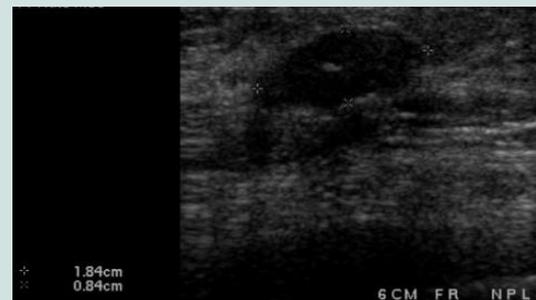
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positive and Her2 neu receptor negative. All margins were negative. She is currently undergoing radiation therapy followed by hormonal therapy. The patient was followed up every 3 months, and at the last follow-up examination in October 2016, the patient exhibited no signs of recurrence.

## Discussion

Fibroadenomas (FA) are a common type of benign tumor that occurs in younger women below the age of 35 years old, with a reported incidence rate of 7-13% in female individuals. It may occur at any age; however, the peak age of incidence is in the second and third decade of life. The FA can be stimulated by estrogen, progesterone, pregnancy and lactation, and may undergo atrophy during menopause [1,2]. Furthermore, FA is a biphasic tumor composed of stromal and epithelial components, and can be effectively treated by local excision [3]. Most cases are detected at an early stage, cases of locally advanced carcinoma with distant metastasis have been published [2-6].

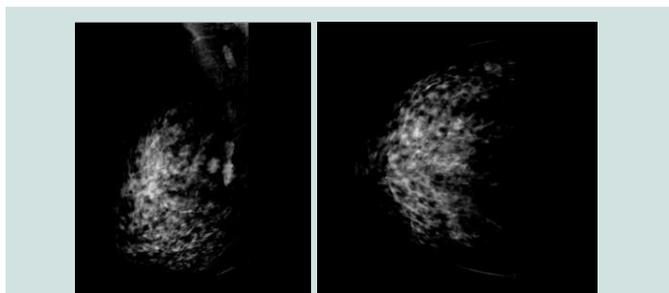
They occur asymptotically in 25% of all patients. The majority FAs are clinically identifiable; however, 25% of cases are non-palpable and, thus, require mammography and/or Ultrasonography (US) for diagnosis [4,7,8]. The incidence of carcinoma arising with FA is rare with range of 0.002 to 0.125% [4-6]. Previous studies have reported that fibroadenomas can evolve into different types of malignancy, such as lobular intraepithelial neoplasia, lobular carcinoma *in situ*, malignant phyllodes tumors and microinvasive lobular carcinoma



**Figure 1:** Hypoechoic, oval shaped mass at 9 'o' clock, benign findings. Recommend 6 month follow up BIRADS 3 08/2006.



**Figure 2:** Right breast 9 '0' clock position hypoechoic mass 1.8 cm with a foci of calcification, BI RADS 2.



**Figure 3:** Three contiguous homogeneous macrolobulated lesions anterior to pectoralis major, haven't changed since prior imaging. BIRADS 3.

following surgically excised FA appears to depend on the histological characteristics of FA and the state of the breast parenchyma [4,23].

The present case showed that FAs containing foci of carcinoma *in situ* can be indistinguishable from benign lesions following imaging, therefore, despite the incidence of carcinoma within FA is estimated at 0.002-0.125%, it should be considered a long-term risk factor for invasive breast cancer. The present describes a case of DCIS arising within an FA and conducts a review of the relevant literature.

FA is considered to be an aberration of normal breast development [24] and the majority that occur in younger females may resolve or reduce in size without intervention [8,25]. Although malignancy in



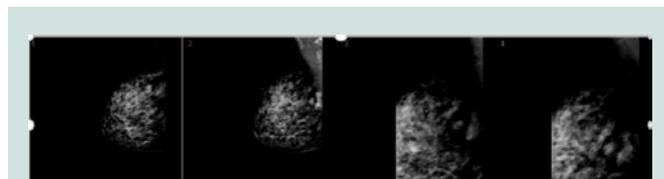
**Figure 4:** Ultrasound right breast showed 1.8 cm hypoechoic, oval shaped mass with central calcification noted at 9'0' clock position consistent with Fibroadenoma, benign findings. Recommend annual follow up BIRADS 2.

[7-11].

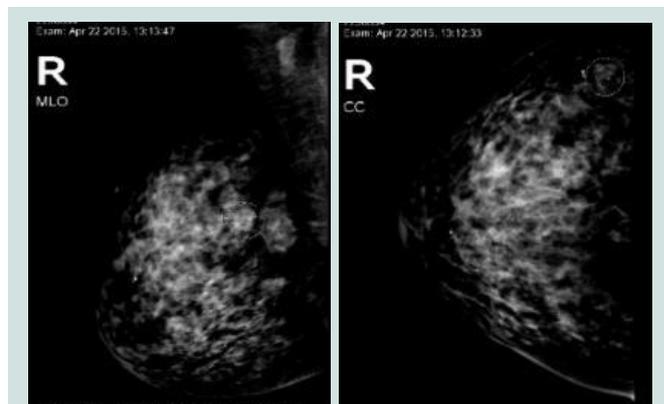
According to its clinicopathological presentation, FA can be divided into simple and complex FA. Complex FA is characterized by cysts, sclerosing adenosis, epithelial calcification or papillary apocrine change [1,12,13]. Carcinoma arising within a fibroadenoma is a rare with an incidence rate of 0.1-0.3% in a screened population [14] and unique subtype of mammary cancer, which was reported by Buzanowski-Konakry et al. in 1975 [9]. To date, <130 cases have been reported in the worldwide literature [15-18].

Therefore, histological diagnosis is typically unexpected [1,10,11,19,20]. The mean age of patients with carcinoma in FA has been reported as 42-44 years, ~20 years subsequent to the peak age of occurrence of FA [15,21]. Our patient was in this 40's age group. Two-thirds of carcinomas within FA are lobular, and one-third are ductal or mixed ductal and lobular, with the frequency of LCIS and ductal carcinoma *in situ* almost equal [2,15]. Carcinoma is diagnosed as arising within FA if: 1) The carcinoma is entirely encased within the FA; or 2) if the carcinoma is only focally involved with the adjacent breast tissue [3]. The case presented in the present study met the first criterion.

FA is typically considered to be a type of benign lesion and requires careful observation. However, data regarding whether FA is a risk factor for carcinoma is inconsistent [22]. A number of studies have provided evidence of the association between the excised FA and carcinoma. The relative risk of developing breast cancer



**Figure 5:** Diagnostic mammography 2011 three macro lobulated lesions, one mass contains micro as well as macrocalcification unchanged from the previous studies. BI RADS 3.



**Figure 6:** Diagnostic mammogram: 04/22/2015 three oval mass with small anterior nodule 1.5 cm size with increase in the microcalcifications BIRADS 0.



Figure 7: Right breast targeted ultrasound shows hypoechoic lesion with increased central cluster of calcifications.

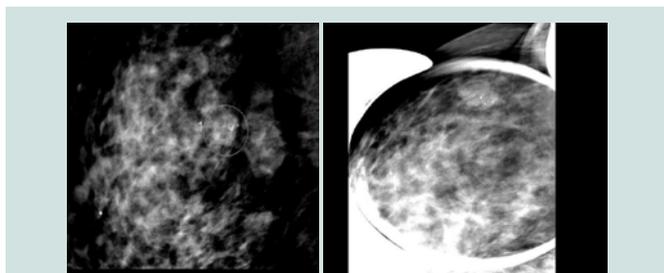


Figure 8: Right breast diagnostic mammogram CC views: A 1.6 cm hypoechoic mass with a cluster of pleomorphic calcifications BI RADS 4. Ultrasound guided biopsy is recommended.

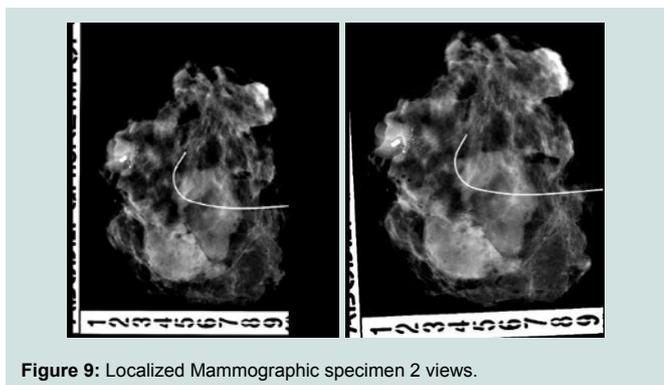


Figure 9: Localized Mammographic specimen 2 views.

FA is rare it may be difficult to predict malignant transformation in a FA, as the clinical and radiological signs may be masked [6]. There is a general consensus that the management of FA depends on the age of the patient, the nature of the lesion, the family history of breast or ovary carcinoma, or any data of proliferative changes in the breasts from previous biopsies [8,26]. For example, previous studies have proposed a conservative therapeutic strategy for FA in patients younger than a certain age. However, the threshold ages proposed or conservative treatment is inconsistent, and have been reported as 25, 35 and 45 years [27-30].

If the lesion increases in size regardless of age, excision is

immediately performed. However, if the lesion is regressive, follow up should be continued until the regression is complete. If the lesion does not completely regress, or stabilizes by the age of 35 years, a lumpectomy is suggested. For females aged >35 years, greater than 2.5 cm, surgery should be recommended if increases in size after a 6- to 12-month follow-up period or any stable FA with complex features on imaging. For patients with a family history of breast and/or ovarian cancer, surgery is more actively advised. Currently, the therapeutic methods used for breast cancer include surgery, chemotherapy, radiotherapy, endocrine therapy and targeted therapy [3]. The treatment for DCIS arising within fibroadenoma is not clearly defined. DCIS is treated by surgical excision, followed by radiotherapy as part of breast conserving treatment, and/or endocrine therapy.

The aggressiveness, morbidity and mortality is not clear. Presence of carcinoma could also be a sign of the deficiency related to the screening system. The use of mammograms in young females has widely been documented to be of limited value due to increased breast density [31]. As most of the patients with FA are young and have dense breast that might preclude detection of these lesions. Ultrasound is operator dependent close follow up may not be as accurate as possible. Hence suggest early MRI of breast as an option. High degree of suspicion is needed, as there are limitations in screening, which adds to the problem of delayed diagnosis.

## Conclusion

The present case was reported to increase awareness that FA in the middle and older age group with complex characteristics on imaging can harbor cancer. We suggest early intervention in this age group.

## Ethical Approval

Consent was obtained from the patient, who agreed with the publication of the case report.

**Consent:** Consent for publication was obtained from the patient directly. She agreed with the only requirement that no personal information (such as name, ID, MRN, etc.) will be disclosed.

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Critical revision of the manuscript for important intellectual content: Dr. Gollapalli V, MD, Dr. Bibi S, MD, Dr. Shah AK and Gilchrist B.