

## INCIDENTAL DETECTION OF CARCINOMA *IN SITU* IN FIBROADENOMA OF BREAST IN A YOUNG WOMAN: A RARE FINDING

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### ABSTRACT

Fibroadenoma is the most common benign tumor of the breast in young females. Breast cancer arising within a fibroadenoma is a rare phenomenon. The incidence of carcinoma within a fibroadenoma is reported to be between 0.1% and 0.3% in a screened population, with a peak age of occurrence between the 4<sup>th</sup> and 5<sup>th</sup> decade. We present a case of 29-year-old female with ductal carcinoma *in situ* in a background of fibroadenoma. There is a low percentage of fibroadenomas harboring carcinoma; however, all breast lumps should be seriously managed; extirpation and histological examination is recommended.

**Keywords:** Fibroadenoma, Carcinoma *in situ*, Benign tumor.

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### INTRODUCTION

Fibroadenoma is the most common benign tumor of the breast in young females, which is treated with lumpectomy. It is more common in women during the 2<sup>nd</sup>-3<sup>rd</sup> decade of life [1].

Fibroadenoma is a benign tumor composed of stromal and epithelial components that display a wide variety of proliferative and non-proliferative histologic changes [1]. Although fibroadenoma is a benign tumor, there has been evidence of increased risk of association with invasive breast cancer [2,3].

It is difficult to assess the carcinoma component in fibroadenoma, because their features are similar to fibroadenoma [4]. They are found to contain both *in situ* and invasive malignancies. Furthermore, progression of the epithelial component to carcinoma *in situ* (CIS) and invasive carcinoma has been documented in the literature [3,4]. Cheatele and Cutler were the first to describe carcinoma arising in a fibroadenoma in 1939 [5].

The risk of developing carcinoma in fibroadenoma was common in complex fibroadenomas and during the 4<sup>th</sup>-5<sup>th</sup> decade of life [2]. However, the transformation of benign fibroadenoma to carcinoma is rare. Ductal CIS (DCIS) in a fibroadenoma not only changes the treatment modality but also the prognosis. We hereby report a rare case of DCIS arising from multiple fibroadenomas in a young female.

### CASE REPORT

A 29-year-old female presented to the hospital with multiple lumps in both breasts for 8 years. There was no family history of breast carcinoma.

On clinical examination, there were multiple lumps in both the breasts, eight on the right side and four on the left side. The lumps had well-defined margins with smooth surface. They were firm in consistency and freely mobile. There was no tenderness, local rise in temperature, nipple discharge, or palpable axillary lymph nodes. Routine blood investigations were normal. A clinical diagnosis of multiple fibroadenomas was made.

Ultrasound of both the breasts revealed well-circumscribed, homogenous, and hypochoic lesions. The features were suggestive of fibroadenoma of bilateral breasts (Fig. 1).

Fine-needle aspiration cytology was done and showed multiple cohesive clusters of branching papillary fronds of benign ductal epithelium suggestive of fibroadenoma (Fig. 2).

Based on the imaging and cytology reports, she underwent lumpectomy at Kasturba Hospital, Manipal, and the excised tissue was subjected for histopathological examination. Grossly, multiple, well-circumscribed, and encapsulated masses with the largest measuring 4 cm×2 cm×2.5 cm were noted (Fig. 3).

On cut section, they were homogenous, gray-white with slit-like spaces. On microscopy, benign compressed ducts with pericanalicular and intracanalicular proliferation were predominantly seen suggestive of fibroadenoma along with one lump showing nests of cells having pleomorphic nuclei, prominent nucleoli with atypical mitosis, and cribriform pattern suggestive of DCIS (Figs. 4 and 5).

The patient was healthy and there was no evidence of recurrent disease 12 months after the excision.

### DISCUSSION

Fibroadenomas are the most common benign tumors of the breast. It mostly affects younger age females with peak incidence during the second to third decade of life. In our case, the age of the patient was 29 years who presented with multiple, mobile lumps in both the breasts and was diagnosed as fibroadenoma. These tumors are benign and carcinoma arising from fibroadenoma is a rare phenomenon. The frequency of carcinoma inside a fibroadenoma is 0.1-0.3%, the median age for breast cancer was 61 years of age and was extremely rare in women <30 years of age [2-4].

Breast is a dynamic organ which undergoes physiological changes during puberty, menstruation, pregnancy, and lactation [6].

Triple test is done to evaluate breast lesions such as clinical examination, fine-needle aspiration cytology, and mammography [1,7]. There are

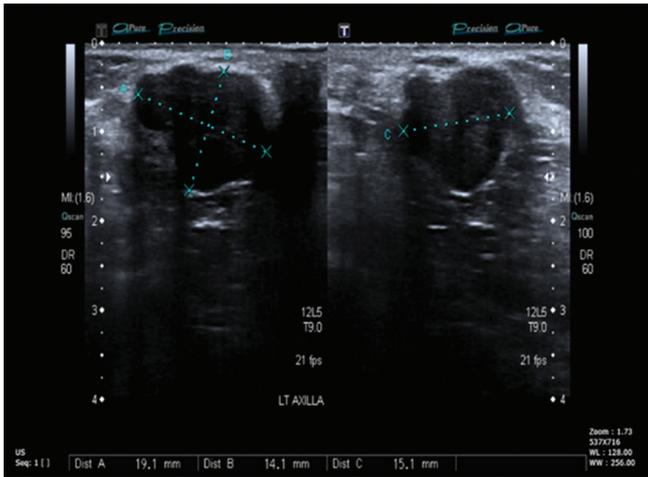


Fig. 1: Ultrasonography - hypoechoic lesion

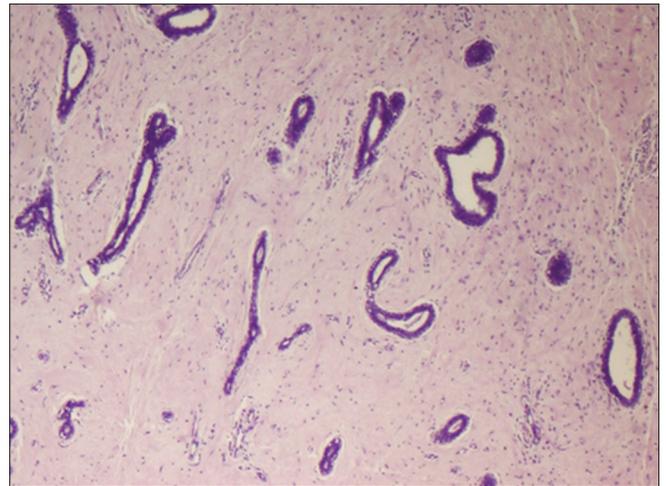


Fig. 4: H and E - fibroadenoma with compressed ducts

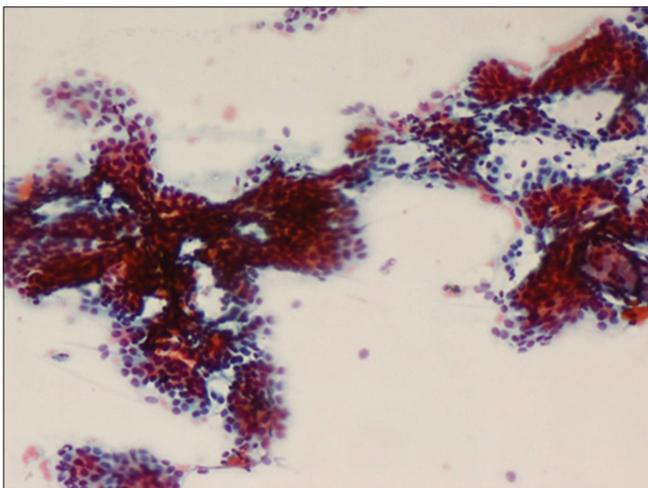


Fig. 2: Fine-needle aspiration cytology - cohesive clusters with branching papillary fronds

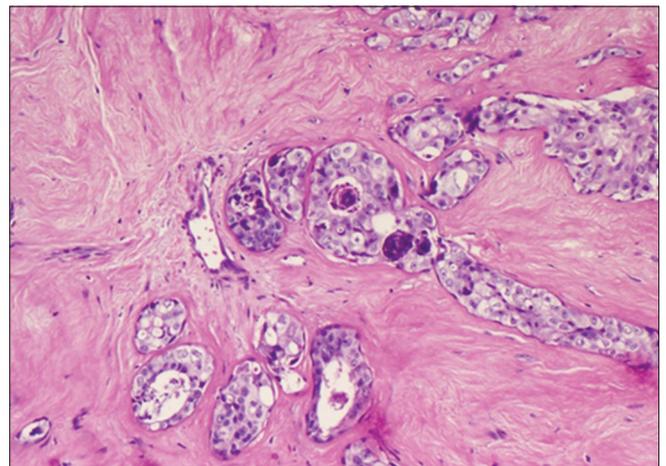


Fig. 5: H and E malignant cellular proliferation with comedo necrosis suggestive of ductal carcinoma *in situ*



Fig. 3: Gross-multiple, well-circumscribed, encapsulated masses

no clinical criteria to suggest malignant focus has developed within a fibroadenoma [8]. The most common presenting symptom is a palpable mobile mass, occurring in 66% of patients, with a diameter varying from 0.5 cm to 10 cm [9,10]. Fondo *et al.* reported microcalcifications

inside the tumor in 4 of 9 cases. There were no such features in our study [11].

On sonography, fibroadenoma is an isoechoic or minimally hypoechoic, solid nodule that is generally associated with homogenous texture. Sonography findings are more useful than mammogram [7].

Fibroadenomas show various features such as proliferative epithelial changes such as hyperplasia, calcification, squamous metaplasia, adenosis, papilloma, CIS, and invasive carcinoma [1,12]. Fibroadenomas are classified as simple or complex. Complex fibroadenomas show many variations compared to simple fibroadenomas because of the presence of cysts (>3 mm), sclerosing adenosis, epithelial calcifications, or papillary apocrine changes. This can lead to higher risk for transformation into malignancy [13].

Complex fibroadenomas and proliferative disease adjacent to fibroadenoma are associated with a slight increase in the risk of breast cancer. 66% of carcinomas inside fibroadenoma are lobular and 33% are ductal or mixed ductal and lobular; lobular CIS and DCIS have same frequency [14,15]. Pre-operative diagnosis of carcinoma arising from these lesions is difficult because of the close resemblance of presenting features with benign fibroadenoma [12-18].

Whether fibroadenoma is a risk factor for breast cancer remains uncertain, and several reports have discussed this phenomenon. Dupont *et al.* reported that the risk of invasive breast cancer was 2.17 times

higher in patients with fibroadenoma and increased to 3.10 times higher in complex fibroadenomas. The risk of malignant change persisted even 20 years after the diagnosis of fibroadenoma. Other studies also provide strong evidence that fibroadenoma with hyperplasia is associated with an increased risk of breast cancer [19,20].

Many criteria are followed to diagnose carcinoma in fibroadenoma. Diagnostic criteria of DCIS within fibroadenoma require showing at least one of the following findings.

- Intraductal carcinoma focus is also seen in the adjacent breast
- Intraductal proliferative lesions within fibroadenoma show cancer characteristic findings, for example, epithelial necrosis [20].

The older patient with a positive family history of breast carcinoma may have more clinical importance than younger women. The environmental risk factors are associated with breast carcinoma such as unhealthy dietary habits, obesity, use of unsafe cosmetics, estrogen exposure, hormone replacement therapy, use of oral contraceptives, and smoking [21].

Excision with breast conservative surgery done for *in situ* carcinoma arising in fibroadenoma. Radiotherapy and chemotherapy are usually not required but advised in advanced cases with axillary lymph node involvement. Early detection has good prognosis.

## CONCLUSION

Carcinomas are common in complex fibroadenoma, in patients with family history of the breast carcinoma and the risk of carcinoma increases as age increases. Hence, all cases presenting in old age and positive family history are screened for any possibility of carcinoma. In the present study, it was a younger female, radiology and cytology revealed multiple fibroadenomas, but carcinoma was detected incidentally on histological examination. Hence, there is a need for extensive sampling to prevent false-negative diagnosis, especially in younger women.

## AUTHORS' CONTRIBUTION

Dr. Nikitha, Dr. Brij, and Dr. Pavithra contributed to the design of the case report and to the writing of the manuscript and have reviewed the article.

## CONFLICTS OF INTEREST

All authors have none to declare.

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