

Invasive Lobular Carcinoma within a Fibroadenoma: A Case Report and Review of the Literature

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Abstract: Fibroadenoma (FAD) is the most common type of breast lesion especially in young female individuals. Although malignant transformation in FAD is rare, several reports have described a higher risk of subsequent breast carcinoma amongst patients who have FAD with specific histologic features. The case of a 30-year-old female exhibiting invasive lobular carcinoma arising within an excised fibroadenoma is being presented. The literature was reviewed with regards to the increased likelihood of developing breast cancer in patients with FADs. The incidence of cancer found in an excised FAD is extremely low, but there are specific proliferative changes on the histology after a core needle biopsy, that they should warrant excision biopsy.

Keywords: Fibroadenoma, Invasive Lobular Cancer, Core Biopsy, Excision Biopsy

1. Introduction

Fibroadenoma (FAD) is a common benign disease of the breast in females. Malignant transformation in FAD is rare. However, there are reports describing a higher risk of subsequent breast cancer amongst patients who have FAD with relative risks (RRs) ranging from 1.48 to 1.7 [1-5].

FAD may occur at any age, however is mostly encountered in premenopausal women and the peak age of incidence is the second and third decade of life [6]. On histology FAD is a benign tumour composed of both epithelial and stromal components. They can be classified as simple or complex according to specific histological features [7]. *Complex* FADs are associated with histologic characteristics, including cysts (>3mm), sclerosing adenosis, epithelial calcifications, or papillary apocrine metaplasia [1]. FADs resemble a hyperplastic breast lobule and they respond to same hormonal stimuli as the normal breast tissue [8]. In the past, FADs were acknowledged as benign tumours of the breast [9] and traditionally were treated in their entity with surgical excision to exclude malignancy. That management has been challenged, as in most of the cases a confident diagnosis and exclusion of malignancy is possible with the combination of imaging techniques and needle core biopsy. Also, the current view that FADs are hyperplastic rather than neoplastic and that they

represent an aberration of normal lobular hypertrophy during the period of maximal estrogen exposure supports a policy of non-surgical management [10-11]. However, symptomatic, progressively enlarging masses or atypical presentations may warrant surgical excision. Although very rare, breast cancer arising within fibroadenoma can still be found. The incidence of the above ranges from 0.02% to 0.125%, according to different reports [1, 7, 12]. So far, just over 100 cases have been reported in the literature [6, 13, 14].

2. Case Report

A 30-year-old lady represented in the breast clinic with a 6 years history of left breast FAD, which had increased in size with no pain, skin changes or nipple discharge. She was seen initially 6 years ago, when she had a core needle biopsy suggestive of a left breast FAD.

On examination, there was a 5x6cm solid, mobile lump in the upper outer quadrant of the left breast. Examination of the contralateral breast was normal.

Ultrasound scan revealed a 4.1cm – previously 1.7cm-hypoechoic mass at 2 o'clock position of the left breast, with some internal vascularity, likely to represent a FAD.

4x14 gauge core biopsies were obtained, as it had increased significantly in size since the last time. The histology again

confirmed a FAD (B2).

MDT (Multi Disciplinary Team) recommendation was for excision considering the significant increase in size. Excision biopsy revealed a 19gr lobulated mass, 3.5cm in maximum diameter, compatible with FAD. Unexpectedly, within the FAD, there was a component of invasive lobular carcinoma measuring 15mm in maximum diameter and associated lobular carcinoma in situ (LCIS). As the tumour was confined within the FAD, resection margins were all clear. No lymphovascular permeation. The receptor status on immunohistochemistry revealed Oestrogen receptors (ER) positive and HER2 negative. The specimen was reviewed by 2 different consultant histopathologists who concurred with the findings.



Figure 1. Most recent USS showing FAD of left breast.

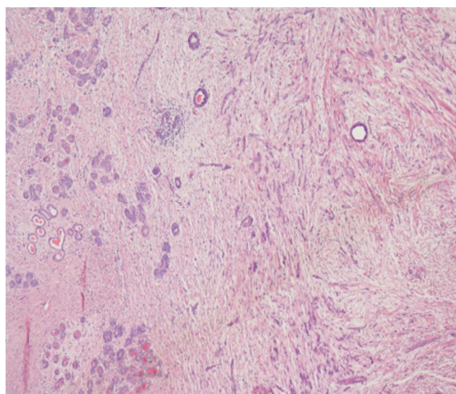


Figure 2. Histopathology image showing both FAD and invasive cancer.

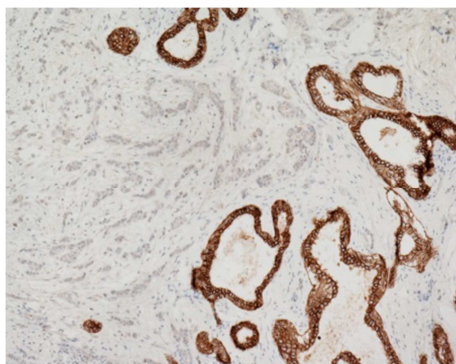


Figure 3. Different stain of histopathology showing FAD and the cancer.

A contrast enhanced MRI scan revealed no concurrent lesions on either breasts.

She subsequently underwent excision of cavity walls and

sentinel lymph node biopsy (SLNB), to rule out metastasis in regional lymph nodes. Cavity wall biopsies and SLNB confirmed no malignancy.

The patient received adjuvant radiotherapy to the breast and was commenced on tamoxifen 20 mg.

She is being followed up with regular annual surveillance mammograms and scans.

3. Discussion

FAD is a common type of benign breast lesion with a reported incidence rate of 7-13% in female individuals and commonly in the second and third decades of life [6]. A carcinoma arising in a FAD is extremely rare, with an incidence of 0.02% to 0.125% [1, 7, 12]. The mean age of patients found to have cancer (*in situ* or invasive) within a FAD - is 42-44 years, approximately 20 years subsequent to the peak age of occurrence of FAD [15]. Most breast cancers found in FADs are reported to be *in situ* (66.9% LCIS and 12.4% DCIS), followed by invasive carcinoma (11% IDC and 3.4% ILC) [16]. Given the extremely low incidence of ILC found in FAD, the current case report is one of the rarest.

Dupont et al [1] described breast cancer in women with FAD more than two decades ago. He concluded that FAD confers an overall relative risk (RR) of 2.17%. However the risk increased to 3.1% for women with complex FAD. He further showed that the increased risk persisted for decades after the initial diagnosis. In a recent Cohort Study conducted in Mayo Clinic [17], the risk was not significantly different between women with simple FAD and women with no FAD. It is notable that these 2 cohorts are amongst the largest cohorts of women with FAD studied to date. The data from the above studies suggest that the risk of breast cancer in women with FAD is driven by the histologic features present in association with the FAD, such as proliferative disease without atypia (PDWA) or atypical hyperplasia (AH). PDWA criteria were ductal hyperplasia (more than mild), papillomas, radial scar or sclerosing adenosis. AH included atypical ductal or lobular hyperplasia [17]. In the institution, where the current patient was treated, the above features, if found in a lesion after a needle core biopsy, are characterized as B3 lesions (Breast Pathology Coding system in UK) and patients are offered an excision biopsy.

Neville G *et al* [18] suggested that excision based solely on size is not warranted in clinically and radiologically concordant cases with a diagnosis of FAD on CNB. Their study included a total of 12,109 consecutive radiologically guided CNB that were performed in a period of time of 5 years; 3438 with a diagnosis of FAD were identified of which 290 cases went on to have surgical excision. Of those 290 cases; 98.28% (n = 285) were confirmed as FAD on excision. The remaining 1.72% (n = 5) had atypical features-FAD with LCIS (n = 1), benign PT (n = 3), and invasive ductal carcinoma (n = 1).

In this case, the patient received Breast Conserving Surgery (BCS), as the final pathology report confirmed clear margins (>2mm). In a recent collective analysis of case reports in the literature regarding breast carcinomas arising within FADs

[19], most of the patients received BCS. Breast carcinomas are usually found incidentally during histology, when the tumour is already excised. This could explain the high rate (66.7%) of BCS in these patients. The BCS rate is compatible with the reported data in the management of breast cancer with the same tumour size in the NASBP B-06 trial (National Surgical Adjuvant Breast and Bowel Project) [19].

Our patient received adjuvant radiotherapy and endocrine blockade, as it would be the standard management in any patient diagnosed with invasive cancer which was ER receptor positive. Tiu *et al.* stated that breast cancer found within a FAD behaves like breast cancer arising de novo and hence the treatment would remain the same [20].

In author's institution, simple fibroadenomas (B2) <3.5cm are being managed conservatively. Criteria to proceed with excision biopsy are FADs bigger than 3.5cm or biopsy containing atypia or proliferative features that characterize it as B3 lesion, or the patient is symptomatic or wishes to have it excised.

4. Conclusion

Malignant transformation in FAD is rare. There is general consensus that the management of FAD depends on the presence of proliferative changes. There should be an open discussion with patients with certain features on biopsy of FAD and they should be offered excision and if incidentally noted to have cancer should be managed as per standard protocol.

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