



Low Grade Well-circumscribed Well Differentiated Liposarcoma Developed in Fibroadenoma with Stromal Adipose Differentiation of the Breast; A Case Report

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Abstract

Fibroadenomas are the most common breast tumor in adolescents and young women. They comprise 20% of benign breast masses and 12% of all breast masses in postmenopausal women. Smooth muscle metaplasia and adipose differentiation are uncommon forms of stromal differentiation encountered in a minority of fibroadenomas. Liposarcoma can arise from pre-existing benign lesions like phylloides tumour or from lipoid tissue in the breast. In this article we present a case of 38 year-old female who presented with a right breast mass which was clinically diagnosed as a case of fibroadenoma, but histologically showed a low grade well-circumscribed liposarcoma discovered in a pericanalicular type of fibroadenoma with stromal adipose differentiation. According to our knowledge, this the first case of a well-circumscribed liposarcoma arising in fibroadenoma of the breast.

Keywords: [Breast Fibroadenoma](#); [Stromal Adipose differentiation](#); [Well-differentiated liposarcoma](#).

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Introduction

Fibroadenomas are benign tumors that arise from the epithelium and stroma of the terminal duct-lobular unit, and are the most common breast tumor clinically and pathologically in adolescent and young women [1]. In one consecutive series of patients reported by Hunter et al., 44% of fibroadenomas were seen in



postmenopausal women. They account for 20% of benign masses and 12% of all masses in postmenopausal patients [2].

The age distribution for fibroadenomas ranges from childhood to more than 70 years of age with a mean age of about 30 years and a median of about 25 years. Less than 5% of women with a fibroadenoma as their presenting tumor are older than 50 years or are postmenopausal. Most fibroadenomas are not larger than 3 cm. In one series, only 10% of the tumors were larger than 4 cm [1, 3].

Malignant changes in fibroadenomas are found in only 0.1% of cases. They usually involve the epithelial component and the large majority are in situ lesions [4-6].

Uncommon forms of stromal differentiation are encountered in a minority of fibroadenomas. These include smooth muscle (myoid) metaplasia and adipose differentiation [7,8].

Most fibroepithelial tumors with adipose differentiation are phyllodes tumors (PT)[1,9]. Malignant phyllodes tumors are rare nonepithelial neoplasms of the breast comprising less than 1% of all breast tumors and only 2-3% of fibroepithelial neoplasms [10]. It has also been estimated that approximately 7% of PT contain adipose tissue in small amounts, with liposarcomas arising in the breast being extremely rare [9, 11-13].

The sarcomatous elements including angiosarcoma, leiomyosarcoma, osteosarcoma, chondrosarcoma and rhabdomyosarcoma are rarely encountered in malignant PTs. Liposarcomas may also develop as stromal components of PTs [1, 14-16]. Liposarcomatous differentiation in PTs may consist of well-differentiated, myxoid, round cell and pleomorphic liposarcomatous elements.

Thus far, liposarcoma in malignant phyllodes had been reported in females and one transgender (genotypic XY male and phenotypic female) patient [14].



Apart from malignant phyllodes tumor, other stromal sarcomas are the angiosarcoma, leiomyosarcoma, and liposarcoma of the breast. Liposarcoma of the breast are reported to be 3-24% of the primary sarcomas of the breast [16-18]. Although some authors mentioned that liposarcoma can arise from pre-existing benign lesions like fibroadenoma or from lipid tissue in the breast, [18] none of them reported a case of liposarcoma arising in fibroadenoma.

Herein we would like to present a case of well-circumscribed, well differentiated liposarcoma that arises from the adipose differentiation areas in a pericanalicular type fibroadenoma and as far as we know this is the first and unique case reported in the accessible English literature.

Case Report

A 38 year old woman, referred to the surgery clinic of Cairo University hospital for a mobile, well-circumscribed painless mass in her right breast. Clinical examination revealed an oval right breast mass at the 4 O'clock position. The mass was approximately 4 cm in maximum diameter, slightly movable with overlying unremarkable skin. Her biochemical and hematology laboratory reported data were within normal limits. An initial clinical diagnosis of fibroadenoma was made. Her mammography and ultrasound examination revealed a classic pattern of fibroadenoma but with a smaller solid nodule, found at one side of the mass, about 1x1cm showed different contrast.

The gross pathology of the excised mass was an oval nodular, 3x2x2cm well circumscribed lesion surrounded by an intact capsule. The mass was firm and elastic in consistency and cut sections revealed nodules which were greyish white in colour and showing microslits. A well circumscribed yellowish area measuring 1x0.9x0.7cm was detected in a peripheral area which was completely surrounded by the capsule of the entire mass [figure 1].

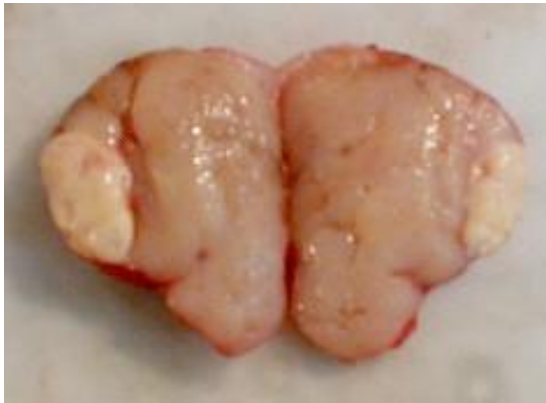


Figure 1: A capsulated oval mass, 3x2x2cm showing a well circumscribed yellowish area measuring 1x0.9x0.7cm at the periphery, completely surrounded by the capsule of the entire mass.

The microscopic examination of the specimen received revealed a lesion consisting of both stromal and ductal proliferation. The proliferating breast ductules were lined by double cell layer; an outer, flattened myoepithelial cell layer and an inner cuboidal ductal cell layer. The ducts were surrounded with proliferating mature fibrous tissue which showed slightly increased cellularity in some focal periductal areas. No mitotic figures, no stromal cellular atypia were observed in these increased cellular areas. Few foci showed adipose metaplasia of the stroma. The macroscopically described well circumscribed yellowish area showed mixture of mature fat cells and many univacuolated and multivacuolated lipoblasts with hyperchromatic, pleomorphic, scalloped nuclei along with hyperchromatic atypic stromal cells. Few scattered benign glands were also detected within the fatty tissue [figure 2].

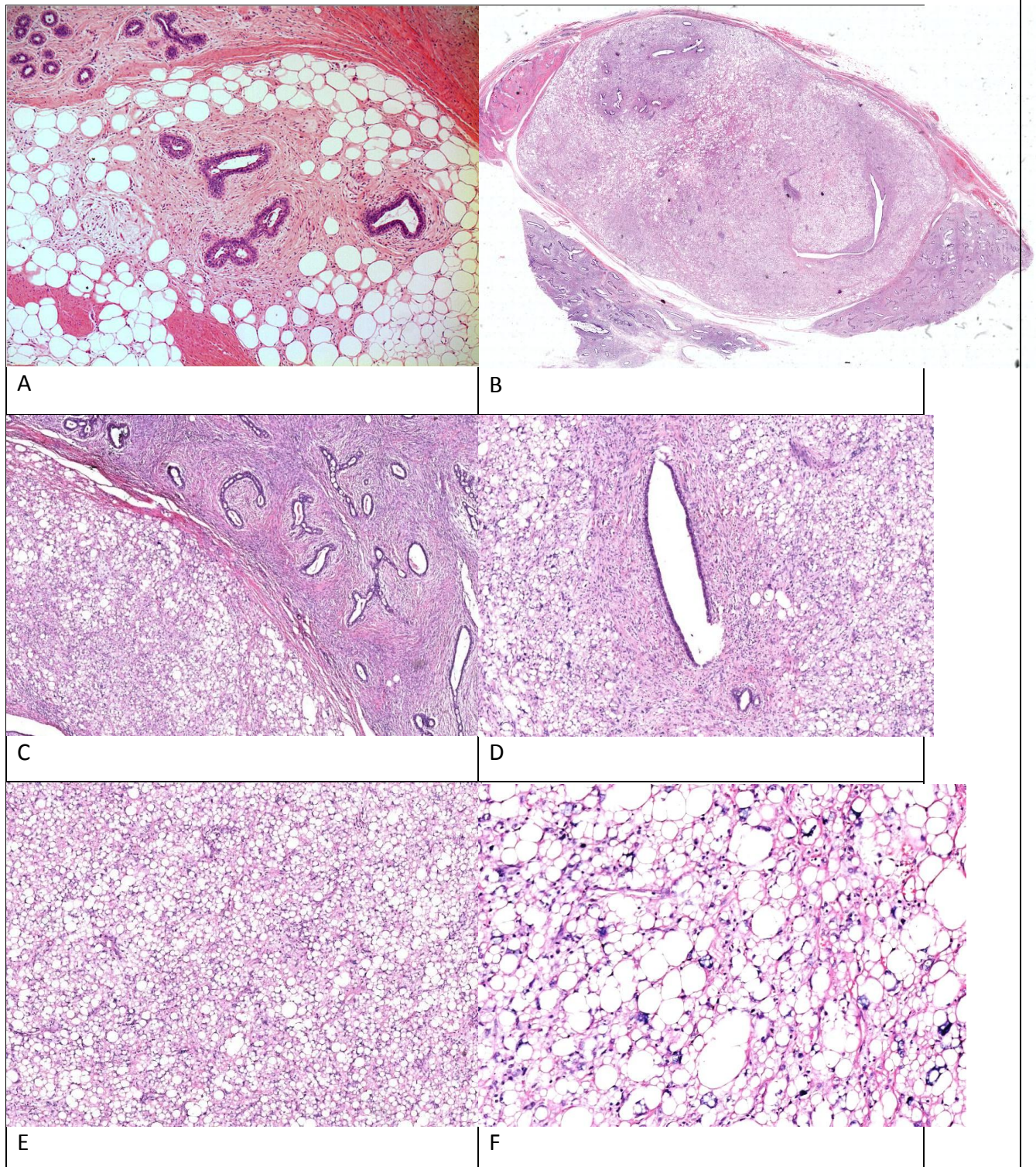
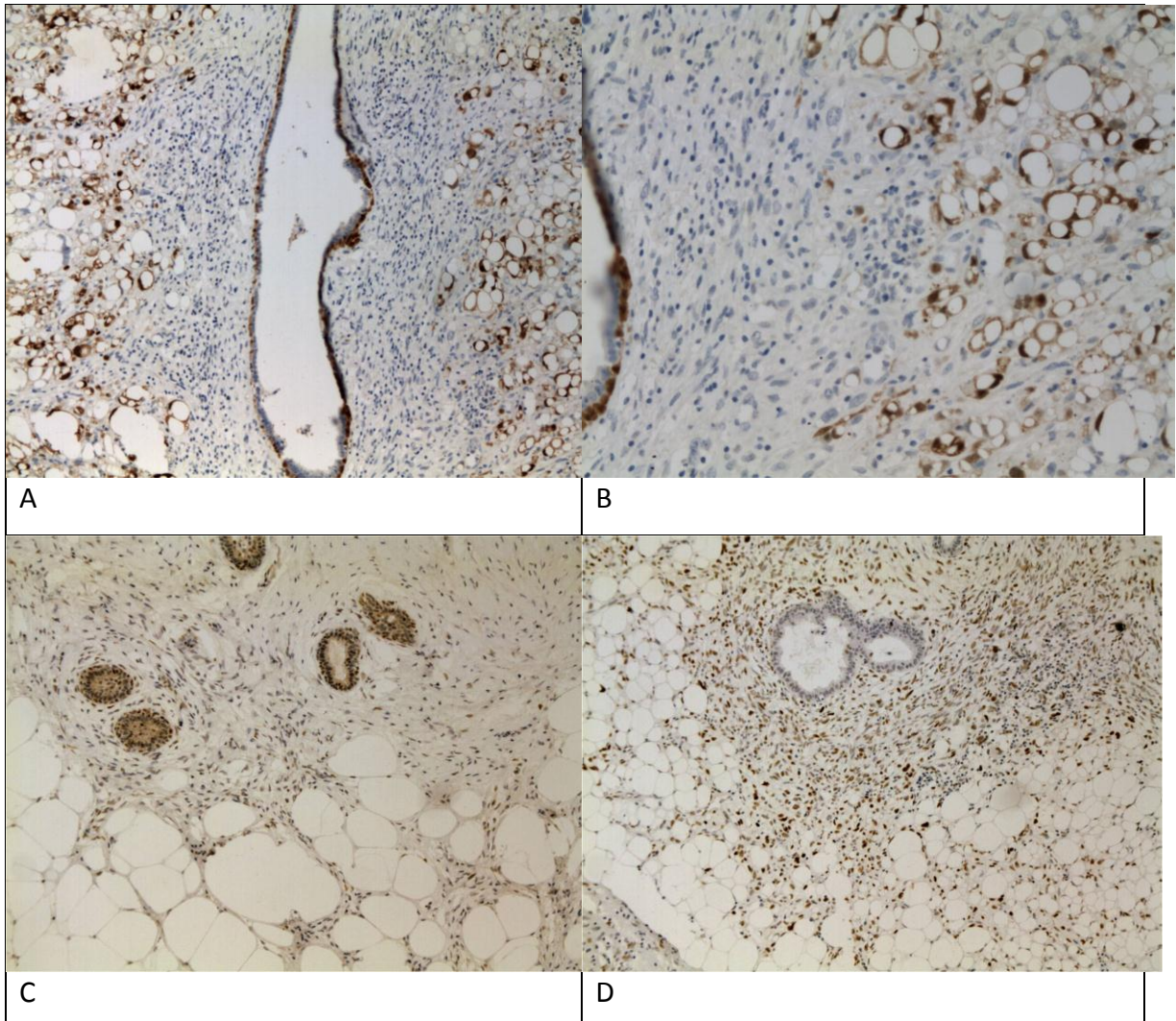


Figure 2: A) Fibroadenoma with foci of Lipomatous metaplasia (x80). B) Very low magnification of the liposarcomatous lesion (x3). C) The well-circumscribed edge of the lesion (x20). D, E&F) Liposarcomatous Foci (x40, x40&x100).



We performed an immunohistochemical panel of vimentin, smooth muscle actin, CD117, CD34, S100 and p53. Vimentin was diffuse and strong positive. SMA and CD 117 were negative. S100 was positive in liposarcomatous areas. CD 34 was positive in benign stromal component. All neoplastic areas of liposarcomatous stroma and lipoblasts were positive with p53 [figure 3].



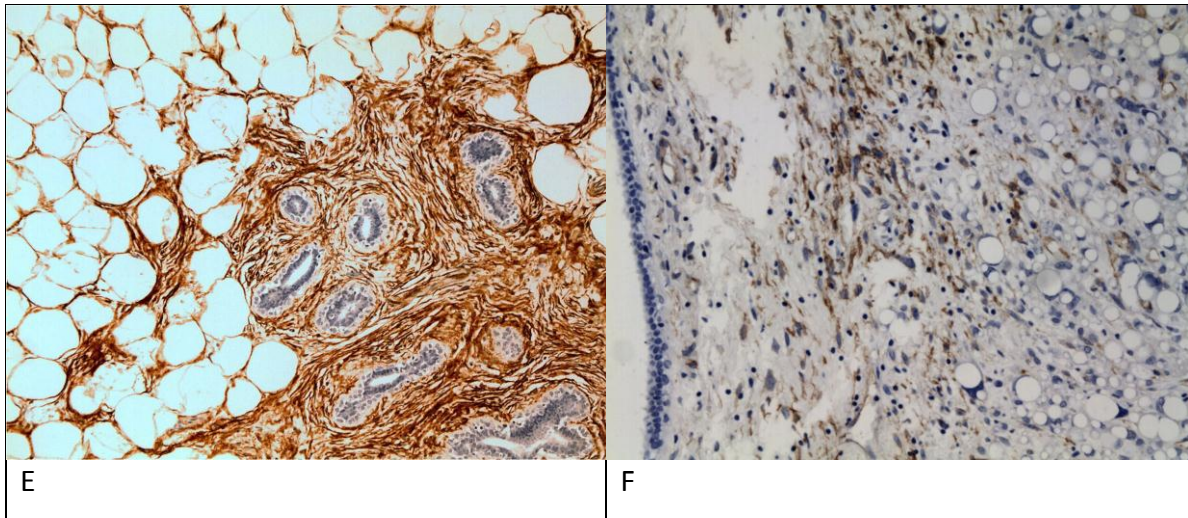


Figure 3: Immunohistochemical Studies: A&B) Liposarcomatous Foci; strongly positive for S100 (x100 & x200). C) Benign areas; negative stroma for P53 (x100). D) Liposarcomatous areas; strongly positive for P53 (x100). E) Benign areas; strongly positive benign stroma for CD34 (x100). F) Liposarcomatous areas; Negative malignant cells for CD34 (x100).

According to clinical, macroscopical, microscopical and immunohistochemical data the case was diagnosed as “Pericanalicular Fibroadenoma of the breast with stromal adipose metaplasia which showed focal transformation to Well-Differentiated Liposarcoma”.

Discussion

There are various reported cases of phyllodes tumors with liposarcomatous differentiation in the literature [13-15]. Even though it is stated in literature that adipose differentiation is seen more often in phyllodes tumors, adipose metaplasia of fibroadenomas is also seen rarely, and we have not encountered any case of liposarcoma developing from the metaplastic adipose stroma in the available English literature.



In our case, both the fibroadenoma itself and the liposarcomatous focus were totally well delineated and the fibroadenoma was surrounded by a capsule. The stroma of fibroadenoma was only focally cellular around the ductal structures and we have not observed any mitosis, necrosis or stromal cellular pleomorphism. Besides, the transition from mature lipoma to liposarcoma was obvious in our case.

Biphasic breast tumors with benign ductal structures and periductal sarcomatous stroma lacking a phyllodes pattern are a source of diagnostic problems particularly because of the lack of an appropriate designation. Periductal stromal tumor (periductal stromal sarcoma) is a useful descriptive designation for generally low-grade biphasic tumors with sarcomatous periductal stroma that do not have typical features of a PT. This rare tumor may evolve into a PT with time. This rare variant of biphasic breast tumor may show stromal mitotic activity three or more per 10 HPF, stromal infiltration into surrounding breast tissue, and hypercellularity, sometimes with cytologic atypia around the ducts. Complete excision of the tumor with a rim of uninvolved breast tissue is required. Simple mastectomy should be reserved for large tumors or lesions with infiltrating margins and unfavorable histologic features [19]. Liposarcoma of the breast are reported to be 3-24% of the primary sarcomas of the breast [17].

This malignancy may arise directly from mammary interlobular stromal tissue, or it can develop as a component of cystosarcoma phyllodes [17, 20]. Nearly 100 cases have been reported after first case was presented by Neumann in 1862 [18].

The histologic criteria for malignancy of phyllodes tumor include stromal cellularity, stromal overgrowth, stromal-cell nuclear pleomorphism, mitotic activity, presence of necrosis, presence of heterologous stromal elements and infiltrative tumor margins [21].



Conclusion

Well differentiated liposarcoma of the breast is a rare neoplasm. The possibility of the development of a liposarcoma on top of stromal adipose metaplasia within a fibroadenoma of the breast could be suspected if different radiological features are present. However, confirmation will require adequate histopathological assessment and immunohistochemical studies to exclude malignant phyllodes tumors and sarcomatoid carcinoma.

Consent

A written consent was taken from the patient.

Competing interests

The authors declare no conflict of interest.

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