

## September 2015 Case of the Month

### A 67 year-old female with a left breast mass

**Contributed by:**

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### Clinical History:

A 67 year old female presented with a lump that she palpated in her left breast while showering. She says that she did not notice the lump before and was concerned about malignancy. Palpating the mass showed a small freely mobile firm mass in the left breast. A mammography was obtained and showed a dense well circumscribed mass measuring 4 cm. An excisional biopsy was performed.

Microscopic Examinations: See Figures 1-5. Image legend at end of article.

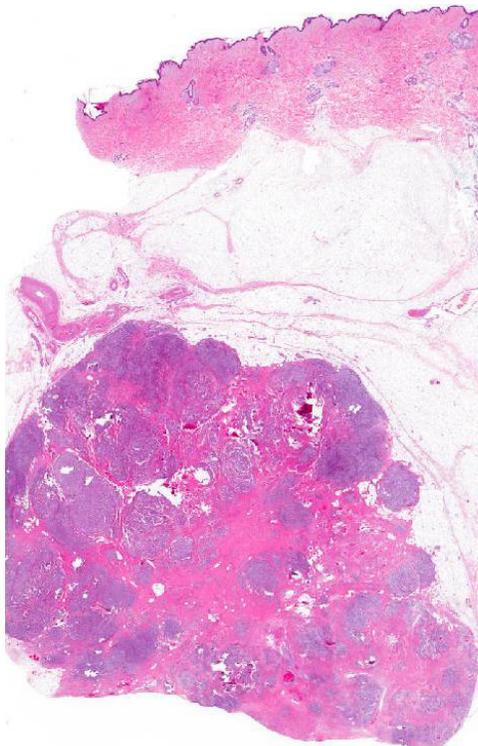


Figure 1

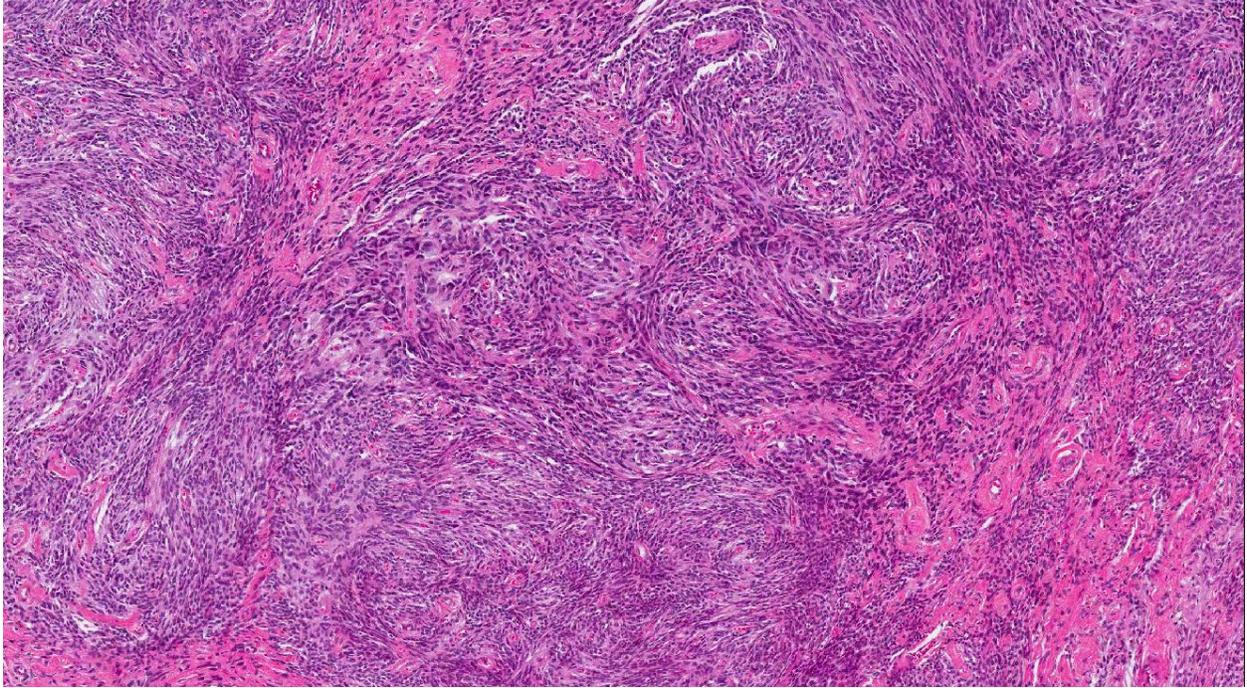


Figure 2

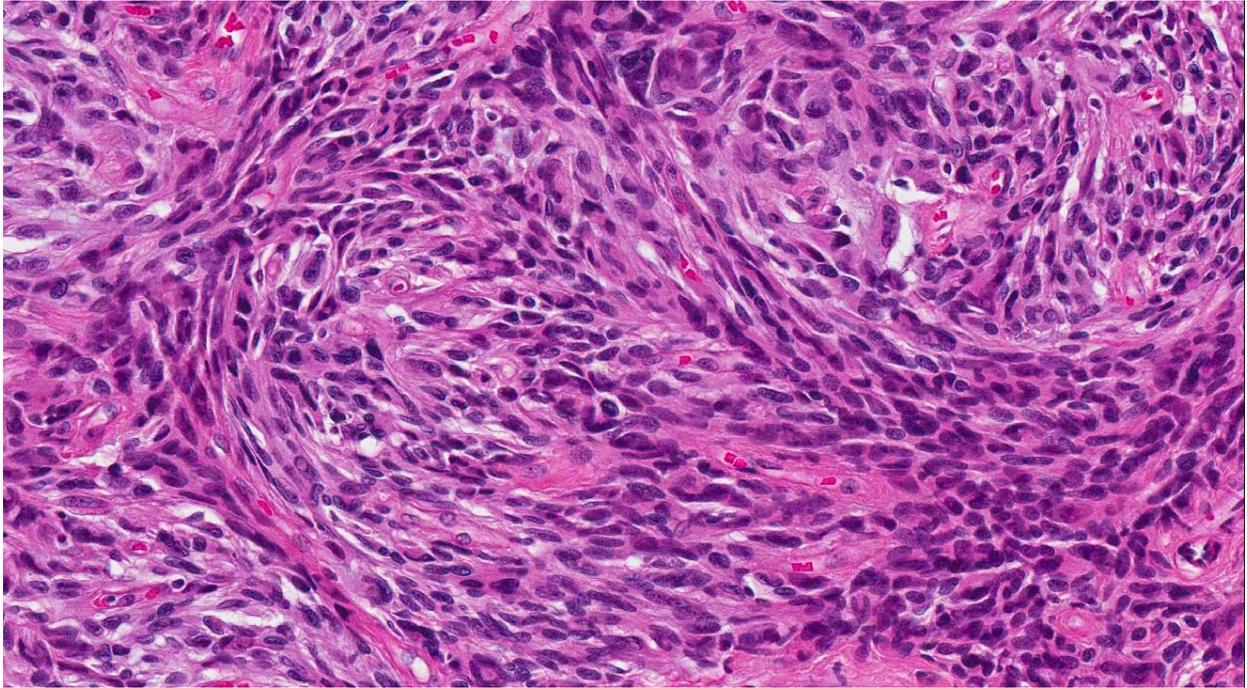


Figure 3

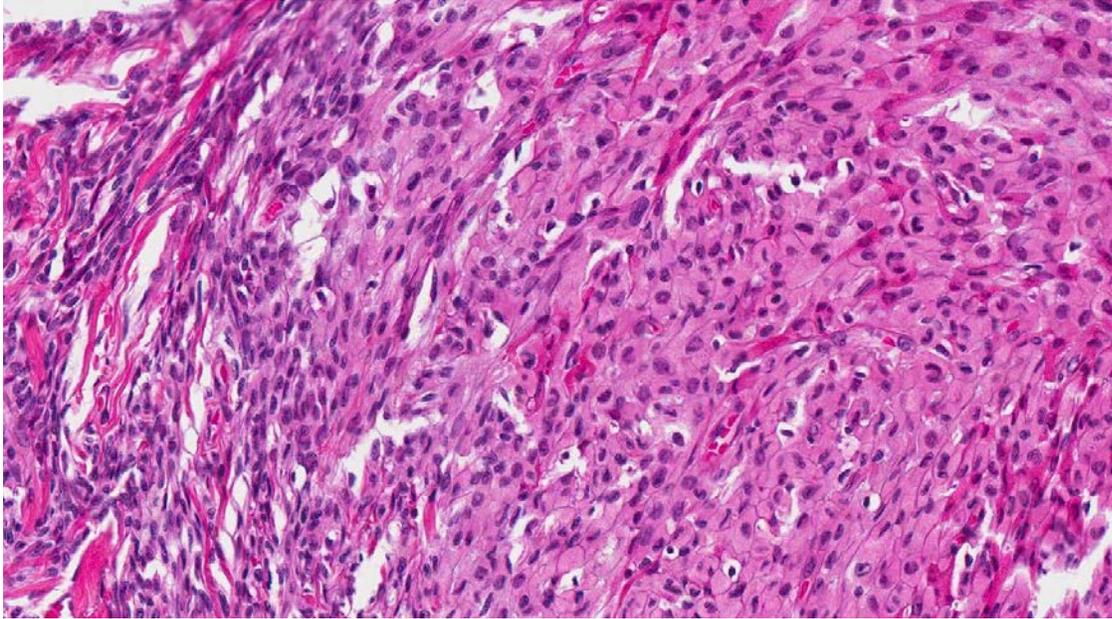


Figure 4

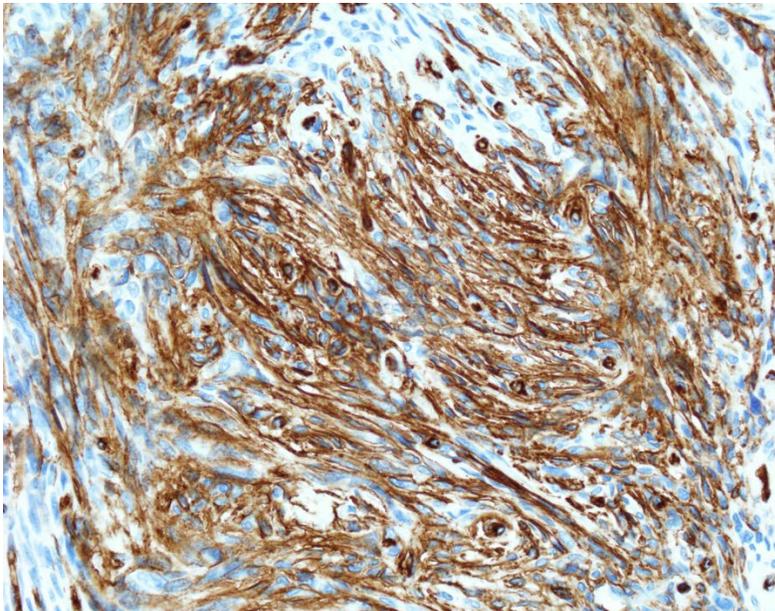


Figure 5

Immunostaining revealed the cells to be positive for Desmin (focal), SMA, CD34, ER and PR. Cytokeratin, and S100 were negative. What is the diagnosis?

- A. Leiomyoma
  - B. Nodular pseudoangiomatous hyperplasia
  - C. Myofibroblastoma
  - D. Cellular fibroadenoma
  - E. Deep benign fibrous histiocytoma
  - F. Myofibroma
-

## Discussion:

Mammary type **myofibroblastoma** is a benign spindle cell tumor that arises from the mammary stroma. The tumor has a predilection to male breasts, however its incidence in female breasts is increasing due to increased mammographic screening[1]. The tumor is reported in adults and is more common in older men and postmenopausal women. The tumor appears to arise sporadically with no genetic predisposition, however it has been reported to arise post trauma, surgery, radiation, androgen depletion therapy and in the setting of gynecomastia[2, 3]. The tumor is usually firm, non-tender and freely mobile and grows slowly to a few centimeters over several months. In rare instances, the tumor has been reported to grow up to 10 cm in diameter (giant myofibroblastoma). Ultrasonography and mammography demonstrate a well circumscribed round to oval dense mass that may show calcifications. The clinical and radiologic findings are usually suggestive of a fibroadenoma or a phyllodes tumor.

Histologically, mammary type myofibroblastoma (MFB) may exhibit several morphologic variants[4]. The classic type MFB is unencapsulated with a pushing and lobulated growth. They are usually composed of spindle cells packed in short haphazardly intersecting fascicles. Amianthoid-like collagen bundles are typically observed in intranodal MFB, however they may be seen in mammary MFBs. The neoplastic cells often range from spindle with scant cytoplasm, to plump eosinophilic cells with overt myoid features. As seen in the case images, the latter cells have abundant deeply eosinophilic cytoplasm and distinct cell borders. Mitoses are absent or rare[4].

Mammary type myofibroblastoma is also described in extramammary locations, now known as mammary type myofibroblastoma of the soft tissue[1]. These tumors have similar morphologic and immunohistochemical features. Although they may arise in any site, they are more commonly encountered in the groins of older men.

Other morphologic variants include cellular, infiltrating, epithelioid, deciduoid-like, lipomatous, collagenized, myxoid and mixed variants. MFBs may contain a variable number of atypical cells showing a variable degree of polymorphism. These worrisome features are more commonly seen in the cellular, epithelioid, myxoid and deciduoid-like variants. Dispersed bizarre cells may be encountered and may be regarded as degenerative in nature. Rarely, giant cells including floret type multinucleated giant cells, heterologous elements and hemangiopericytoma-like patterns may be noted[4]. Soft tissue and mammary myofibroblastomas are considered by some authors to fall in the spectrum of spindle cell lipomas.

MFBs are typically positive for desmin and CD34, and show variable expression of BCL-2, CD99, and smooth muscle actin. H-caldesmon may be positive focally. Estrogen progesterone and androgen receptors are often positive by immunostaining. Cytokeratin, S100, HMB-45 and C-KIT are consistently negative.

The immunohistochemical profile is especially useful in identifying morphologic variants of the tumor. Epithelioid and deciduoid-like variants, especially when exhibiting atypical cells, may be confused with mammary carcinoma. The tumor rarely exhibits infiltrative borders or pseudo infiltration (seen in lipomatous variants) and may be confused with fibromatosis or a low grade sarcoma. In most cases, the diagnosis of a classic MFB is straight forward on light microscopy. The differential diagnosis includes benign spindle cell lesions such as pseudoangiomatous stromal hyperplasia, nodular fasciitis, reactive spindle cell nodule, leiomyoma, and other spindle cell tumors.

#### References:

1. McMenamin, M.E. and C.D. Fletcher, *Mammary-type myofibroblastoma of soft tissue: a tumor closely related to spindle cell lipoma*. Am J Surg Pathol, 2001. **25**(8): p. 1022-9.
2. Wargotz, E.S., S.W. Weiss, and H.J. Norris, *Myofibroblastoma of the breast. Sixteen cases of a distinctive benign mesenchymal tumor*. Am J Surg Pathol, 1987. **11**(7): p. 493-502.
3. Rafique, A. and A. Arshad, *Myofibroblastoma: an unusual rapidly growing benign tumour in a male breast*. J Coll Physicians Surg Pak, 2013. **23**(10): p. 818-9.
4. Magro, G., *Mammary myofibroblastoma: a tumor with a wide morphologic spectrum*. Arch Pathol Lab Med, 2008. **132**(11): p. 1813-20.

#### Figure Legends

1. Low power view showing well circumscribed tumor with lobulated and pushing border
2. Intermediate power view showing short haphazard fascicles of banal spindle cells
3. High power view showing cellular spindled fascicles of cells with a moderate amount of eosinophilic cytoplasm
4. High power view showing a population of more eosinophilic and epithelioid cells with distinct cell borders.
5. CD34 immunostaining showing membranous and cytoplasmic positivity