



Large Desmoid Tumor in the Setting of Prior Cosmetic Breast Augmentation

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ABSTRACT

Desmoid tumors of the breast are rare, comprising 0.2% of all breast tumors. They may be locally invasive but do not metastasize. The etiology is multifactorial including surgical trauma in the setting of prior cosmetic augmentation breast implants. We submit a case of a large desmoid tumor in the breast following silicone implant placement three years prior to patient presentation. The patient was treated with wide local excision to negative margins and implant exchange. A follow up breast magnetic resonance imaging at 3 and 6 months did not detect a recurrence thus far.

Keywords: Breast implant; breast mass; desmoid; fibromatosis; aggressive

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Key Points

- Desmoid tumors of the breast may be due to surgical trauma (i.e. prior breast augmentation surgery).
- Initial treatment could be surveillance depending on presentation.
- If the tumor is complicated, large, invasive, or painful, surgical excision with negative margins (at least 3 cm) is the recommended treatment.

Introduction

Desmoid tumors are locally aggressive tumors that arise from connective tissue. These tumors commonly occur in the abdominal wall, intra-abdominal mesentery and extremities. They do not metastasize. The rate of local recurrence is high at 24–65% in 10 years (1). Desmoid tumors of the breast are rare, comprising about 4% of extra-abdominal desmoid tumors and 0.2% of all breast tumors (2). Breast implants are a potential risk factor for desmoid tumors of the breast. This publication discusses management of a breast implant-related desmoid tumor.

Case Presentation

A 34-year-old healthy female presented with a rapidly growing, painful right breast mass. She had a history of elective bilateral breast augmentation with silicone retropectoral implants, three years prior to development of the mass.

On physical exam an intact right breast implant was detectable. An 8 cm mass occupied the upper inner quadrant of the right breast, partially fixed to the lateral border of the sternum. It was tender to palpation.

Diagnostic work up included a right breast ultrasound, which showed a silicone retropectoral implant and a heterogeneous hypoechoic mass measuring 5.5x3.0x6.0 cm, centered at the 3 o'clock position and 7 cm from the nipple (Figure 1). An ultrasound-guided core needle biopsy of the mass was performed. Pathology was consistent with fragments of desmoid fibromatosis. It appeared to be arising from the implant capsule, as both normal benign breast and skeletal muscle were evident separately from the fibromatosis. A breast magnetic resonance imaging (MRI) study revealed a well-circumscribed enhancing mass centered the 3 o'clock position and 7 cm from the nipple, measuring 3.5x5.5x8.5 cm. The mass was located within the fibrous capsule of the implant and the silicone implant was displaced

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anteriorly by the mass (Figures 2-4). Computed tomography of the chest was performed, revealing no evidence of osseous, extrapleural/pleural or pulmonary invasion. Family history was unknown as the patient was adopted. Genetic testing with an 84 gene panel was performed; results were negative for a pathogenic mutation.

Following multidisciplinary discussion with surgical oncology and plastic surgery, resection of the mass with reconstruction was recommended, due to symptoms and the size of the mass. Intra-operative findings included that the tumor was well encapsulated in the retropectoral space and adherent to the capsule on the chest wall (Figures 5, 6). The existing 295 mL silicone implant was removed along with radical resection of the tumor, including portions of the pectoralis major, minor, and intercostal muscles from ribs 2–5, and the anterior rectus sheath. A subtotal capsulectomy was performed. Reconstruction consisted of placement of a 310 mL cohesive silicone implant. On final pathology, the right breast mass was consistent with desmoid fibromatosis, measuring 9.1x6.5x3.9 cm, with negative margins (Figures 7, 8).

Planned follow up includes the patient initially undergoing a breast MRI every three months to monitor closely for evidence of recurrence. Her first three-month post-operative MRI was negative for any abnormalities (Figures 9, 10).

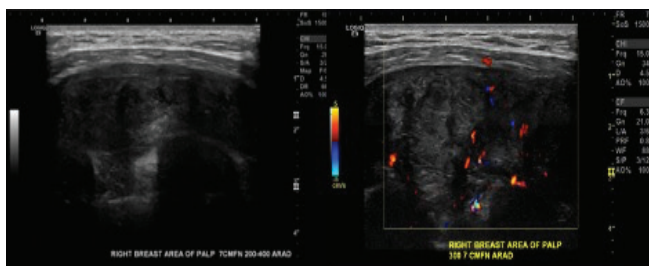
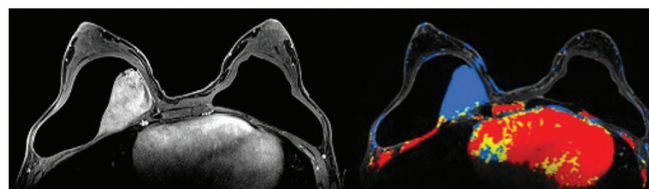


Figure 1. Right breast ultrasound showed a silicone retropectoral implant. There is a heterogeneous, hypoechoic mass, measuring 5.5x3.0x6.0 cm, centered at the 3 o'clock position and 7cm from the nipple. Color Doppler image shows increased vascularity within the mass



Figures 2-4. Contrast-enhanced axial and sagittal bilateral breast MRI showed a silicone retropectoral implant in the right breast and a well-circumscribed enhancing mass centered at the 3 o'clock position and 7 cm from the nipple, measuring 3.5x5.5x8.5 cm. The mass is within the fibrous capsule of the implant. The silicone implant is displaced anteriorly by the mass. The mass demonstrates persistent kinetics

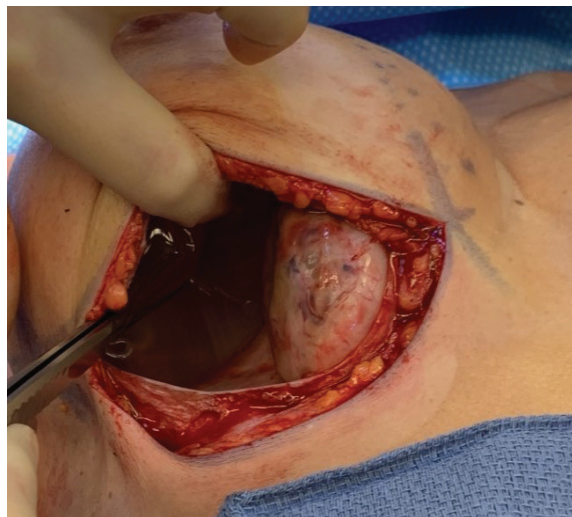


Figure 5. Intraoperative view of desmoid tumor adjacent to implant, through an inframammary incision



Figure 6. Desmoid tumor adherent to the fibrous capsule adjacent to the implant

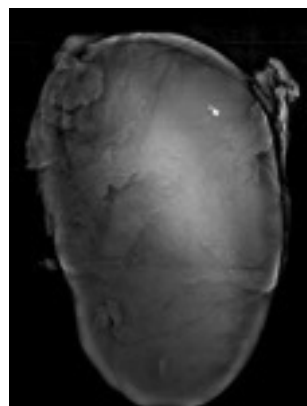
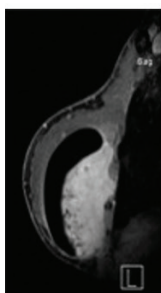


Figure 7. This is the specimen mammogram depicting the mass with the biopsy clip



Figure 8. Desmoid tumor following removal, measuring 9.1x6.5x3.9 cm



Figure 9. On initial presentation the patient has fullness on the right superior/medial aspect of the breast near the chest junction



Figure 10. At two months post-operatively, the right superior medial breast near the chest wall junction appears softer

Discussion and Conclusion

The case we have reported is a rare presentation of desmoid tumor. Breast fibromatosis has been frequently associated with trauma from prior surgery. Breast fibromatosis is thought to arise from the fibrous capsule surrounding the breast implant (3, 4). Prior publications have reported an average time for detecting a tumor from the time of implant placement to be approximately 3 years (4).

Clinical presentation of desmoid tumors can resemble breast carcinoma. On physical exam this can include a hard mass with skin dimpling (5). On diagnostic imaging desmoid tumors can also mimic malignancy. Fibromatosis may present as a mass with circumscribed or irregular margins on mammogram (4, 6). On ultrasound, desmoid tumors usually present as solid masses with posterior acoustic shadowing and the margins may appear microlobulated, spiculated, or irregular (6). Breast MRI is the imaging modality of choice to evaluate extent of disease (4, 6). In most cases, fibromatosis presents as a hypointense to isointense mass on T1 weighted images and heterogeneously hyperintense on T2 weighted images (4, 6). Fibromatosis typically demonstrates persistent kinetics, in contrast to invasive breast cancer which typically demonstrates washout kinetics (6).

Treatment for desmoid tumors is multimodal. The initial treatment for all desmoid tumors is active surveillance as the majority of tumors will remain stable in size. In one case series 88% of patients had stability of disease or regression (7). Other options for non-surgical treatment include non-steroidal anti-inflammatory medications, hormone therapy (tamoxifen), and chemotherapy. If there is enlargement of the tumor or complications related to local invasion, surgery (wide excision) with negative margins is the treatment of choice (1, 2). Radiation is another treatment modality that is typically utilized in cases of a future recurrence after surgery (1). The recurrence rate of breast fibromatosis is lower than that of other sites of fibromatosis, reported at 21–27% compared to 30–65% (4).

In a study by Costa et al. (7), a total of eighty patients with breast desmoid tumors in the setting of prior breast implants at their institution and other cases reported in the literature were analyzed. Patients underwent the following treatments: 82% had a surgical resection; 12% underwent chemotherapy; 4% received Sorafenib; 14% received hormonal therapy; and 4% underwent active surveillance. Breast implants were removed in 50% of patients, replaced in 27%, and kept in place in 23%. In patients who underwent resection, the recurrence rate was 24% within three years. Removal or replacement of the implant did not significantly affect the risk of progression. The standardized incidence ratio (SIR) was calculated to examine if there was a connection between breast implants and breast desmoid tumors. The SIR was 482 to 823, correlating to a 482–823 times higher risk of developing a breast desmoid tumor after breast implant placement compared to the general population (7).

In conclusion, breast fibromatosis may mimic invasive carcinoma on presentation, but it is a locally aggressive benign tumor. The initial treatment recommended is surveillance. If there is enlargement of the tumor or a complication due to the tumor, surgical excision with negative margins is advised. Following definitive resection, surveillance is essential in detecting early recurrence. Given the rarity of this disease a world registry with documented clinical information has been suggested to add to the accuracy of predicting incidence and results of treatment (2).

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Authorship Contributions

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References

1. Lorenzen J, Cramer M, Buck N, Friedrichs K, Graubner K, Lühr CS, et al. Desmoid Type Fibromatosis of the Breast: Ten-Year Institutional Results of Imaging, Histopathology, and Surgery. *Breast Care (Basel)* 2021; 16: 77-84. (PMID: 33708054) [\[Crossref\]](#)
2. Tzur R, Silberstein E, Krieger Y, Shoham Y, Rafaeli Y, Bogdanov-Berezovsky A. Desmoid Tumor and Silicone Breast Implant Surgery: Is There Really a Connection? A Literature Review. *Aesthetic Plast Surg* 2018; 42: 59-63. (PMID: 28842766) [\[Crossref\]](#)
3. Munhoz AM, Marques AA, Milanez JR, Gemperli R. Chest wall reconstruction following axillary breast augmentation and desmoid tumor resection using capsular flaps and a form-stable silicone implant: A case report, diagnosis and surgical technique. *Int J Surg Case Rep* 2017; 36: 110-115. (PMID: 28554106) [\[Crossref\]](#)
4. Seo YN, Park YM, Yoon HK, Lee SJ, Choo HJ, Ryu JH. Breast fibromatosis associated with breast implants. *Jpn R Radiol* 2015; 33: 591-597. (PMID: 26213262) [\[Crossref\]](#)
5. Hammood ZD, Salih AM, Kakamad FH, Abdullah AM, Ali BS, Pshtiwan LRA. Desmoid fibromatosis of the breast; a rare case report. *Int J Surg Case Rep* 2021; 87: 106363. (PMID: 34562723) [\[Crossref\]](#)
6. Alanis L, Roth R, Lerman N, Barroeta JE, Germaine P. Radiologic images of an aggressive implant-associated fibromatosis of the breast and chest wall: case report and review of the literature. *Radiol Case Rep* 2017; 12: 431-438. (PMID: 28828097) [\[Crossref\]](#)
7. Costa PA, Marbin S, Costa BMLA, Espejo-Freire AP, Saul EE, Barreto-Coelho P, et al. A nonrandom association of breast implants and the formation of desmoid tumors. *Breast J* 2021; 27: 768-775. (PMID: 34453383) [\[Crossref\]](#)