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## Giant siliconoma mimicking locally advanced breast cancer: A case report and review of literature

Bryce Carson<sup>a</sup>, Steven Cox<sup>b</sup>, Hishaam Ismael<sup>b,\*</sup><sup>a</sup> The University of Texas Medical Branch, Galveston, TX, USA<sup>b</sup> Department of Surgery, The University of Texas Health Northeast, Tyler, TX, USA

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## ABSTRACT

**INTRODUCTION:** Silicone prosthetics are widely used for breast augmentation and reconstruction. These devices may extrude free silicone into surrounding tissue, stimulating a granulomatous foreign body reaction. The resulting mass can mimic breast cancer.

**PRESENTATION OF CASE:** 71 year old female with a history of a ruptured silicone implant presents with an enlarging left breast mass. Exam demonstrated and ulcerated, fungating mass with active infection. CT scan demonstrated a 23 × 15 cm mass involving the breast and chest wall with axillary lymphadenopathy. Preoperative biopsies were inconclusive and the patient underwent a modified radical mastectomy. Pathology demonstrated a siliconoma.

**DISCUSSION:** While benign, silicone granulomas of the breast can present similarly to malignancy and are an important differential in the diagnosis of a breast or axillary mass for appropriate patients. MRI is the study of choice and core needle biopsies cannot always establish the diagnosis preoperatively. PET scans can be falsely positive and the diagnosis requires an extensive workup to rule out cancer.

**CONCLUSION:** Siliconomas develop as a result of implant rupture and present with many of the signs and symptoms of breast cancer. The majority of patients should undergo surgery for symptom relief or to rule out cancer.

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## 1. Introduction

Since their introduction in the 1960s, silicone prosthetics have been a mainstay in breast augmentation and reconstruction procedures. These devices carry the potential complication of rupture from either trauma or time-related decay. Silicone liquid can escape as the prosthetic shell weakens affecting the surrounding breast tissue. It has a tendency to spread and migrate due to its high fat solubility. The exact prevalence of rupture is unknown, but is likely underestimated as it can be asymptomatic [1]. Silicone granuloma (or siliconoma) describes the inflammatory physiological response to free liquid silicone that occurs in some patients. Winer et al. first described the histopathology of a siliconoma as [2]:

“degenerated anuclear stroma resembling necrobiosis of fibrous connective tissue surrounded by many irregular, oval, clear spaces or cavities. In other areas, this intervening stroma is invaded by a dense infiltrate consisting of lymphocytes, plasma cells, and histiocytes. Some of the clear spaces are lined by a

single layer of nucleated cells, which are syncytial giant cells. Other clear spaces contain foreign body giant cells.”

This description came from a patient who received cosmetic injections of liquid silicone. Legitimate medical providers abandoned this practice shortly after its complications came to light, though cosmetic injection is still performed illicitly in some countries. While silicone prosthetics are much safer, the pathological response following implant rupture is identical. Siliconomas can occur locally, manifest as lymphadenopathy, or present at a distant site due to migration of free. If neglected, siliconomas can create a firm mass, cause local tissue destruction, ulceration, scarring, and nerve damage [1].

This reaction to free silicone has been described in various types of prosthetic devices. However, involvement of breast implants brings up significant concern due to the burden of breast cancer in the modern healthcare environment. Any new breast mass causes modest to severe concern for cancer depending on the clinical context. While silicone granulomas have characteristic diagnostic features on imaging, their appearance may also mimic malignancy [3–8].

We present a case report of a large breast siliconoma and perform a comprehensive review of the English literature. We highlight the diagnostic challenges related to this uncommon presentation.

\* Corresponding author at: General and Hepatobiliary Surgery, The University of Texas Health Northeast, Tyler, TX, USA.

E-mail addresses: [Bwcarson@utmb.edu](mailto:Bwcarson@utmb.edu) (B. Carson), [Steven.cox@uthct.edu](mailto:Steven.cox@uthct.edu) (S. Cox), [Hishaam.ismael@uthct.edu](mailto:Hishaam.ismael@uthct.edu) (H. Ismael).

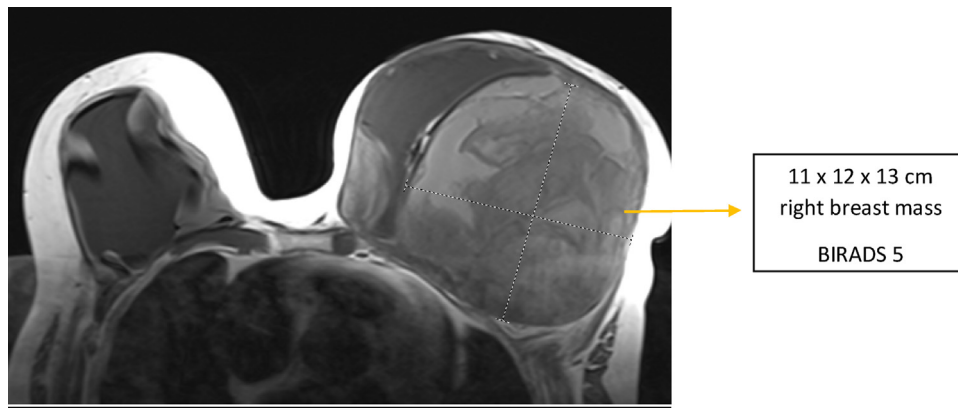


Fig. 1. Noncontrast MRI of the breast on initial presentation.

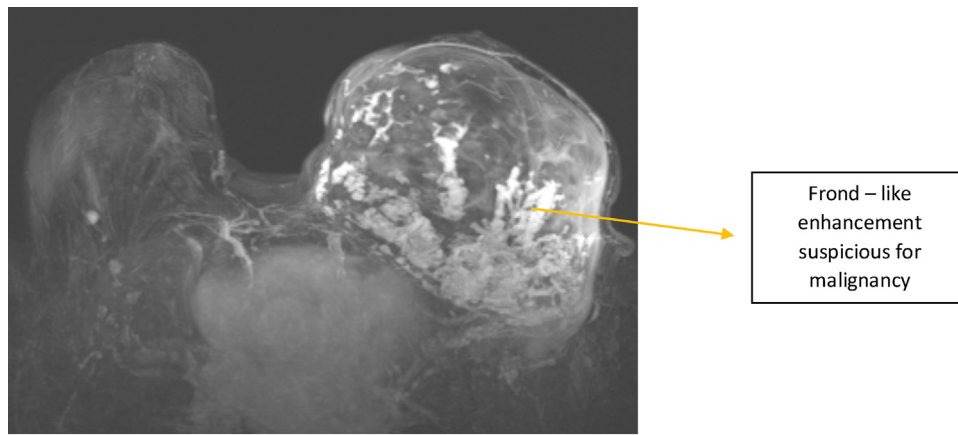


Fig. 2. Contrast enhanced MRI of the breast.

The work has been done in line with the SCARE criteria [9].

## 2. Case report

In 2012, a 66-year-old female presented for mammographic evaluation of a left breast mass that had been growing and hardening over years. She described a history of breast augmentation with silicone implants in the 1980s as well as bilateral re-implantation with saline prosthetics years later due to previous implant rupture. Her mammogram revealed an abnormal density superior to her left breast implant, but the study was limited due to motion. A concurrent ultrasound exam was inconclusive, and a follow up MRI study was recommended to the patient.

The patient received a non-contrast MRI about 9 months later due to concern for implant rupture (Fig. 1). This study showed an 11 × 12 × 13 cm mass in the outer half of her left breast that displaced her implant medially. Both implants appeared intact. She also had left axillary lymphadenopathy. The radiologist interpreted this exam as BI-RADS category 5, highly suggestive of malignancy. An ultrasound-guided biopsy of her left breast done several days later showed only benign fibrinous debris. Due to concern over discordant imaging and biopsy results, she had a repeat MRI done about a month later. This study was performed with contrast to better evaluate the presence of malignancy and need for a repeat biopsy.

The second MRI again showed the 13 cm encapsulated complex mass in the outer half of the left breast (Fig. 2). The mass predominantly did not enhance, suggesting a large component to be hematoma. However, the posteroinferior periphery of the mass

demonstrated extensive frond-like contrast enhancement highly concerning for malignancy (also BI-RADS 5). Her previously seen left axillary node was re-visualized. A re-biopsy of her left breast lesion was again recommended, however, the patient was lost to follow up for several years.

The patient presented again 5 years later to our institution, now 71 years of age. She described continued growth of her left breast over the past year with significant associated pain. She also stated that her left implant “fell out” on its own. On exam, a fungating mass with extensive ulceration occupied her medial left breast. The mass was large, firm and malodorous (Fig. 3). With a presumptive diagnosis of neglected breast cancer, she received several studies while hospitalized. A chest, abdomen, and pelvis CT with contrast showed her left breast mass to now measure 23 × 15 cm (Fig. 4). The mass was partially calcified with ulceration along its medial margin. It appeared to invade her pectoralis muscle, several intercostal muscles, and her 4th and 5th ribs. She had several prominent axillary lymph nodes on the left side. The remaining CT was largely unremarkable with no convincing evidence of distant metastases. She also had a bone scan and brain MRI around this time, neither of which had evidence of metastasis. A biopsy of her left breast yielded amorphous, acellular eosinophilic material with dystrophic calcifications interpreted as possible old necrosis or fibrin deposition. Another biopsy done about a week later had similar results, also without definitive evidence of cancer.

With both active infection of her breast as well as continued pain, she needed the mass removed regardless of its etiology. An extensive modified radical mastectomy with axillary lymph node dissection was performed with final closure of

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