

Storm in a C-cup: A classic case of snowstorm appearance of the breast

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Received - 20 August 2018

Initial Review - 18 September 2018

Accepted - 16 October 2018

ABSTRACT

Free silicone injection in breast though banned, is still practised in some countries by unscrupulous practitioners for breast augmentation. It is an entity which needs prompt identification and treatment. We hereby report a case of free silicone injection in breast highlighting the important role of imaging and classical mammographic and ultrasound appearance.

Key words: Free silicone, Mammography, Snowstorm appearance, Ultrasound

A 44-year-old female came for a consult. She gave a history of “silicone implants” performed for breast augmentation in a clinic in a Southeast Asian country 6 months back. The augmentation procedure was offered at an attractive discounted price. 1-week post-procedure, she noticed that her breasts started to get lumpy and discolored. Hence, she came for a consult.

On examination, the patient was stable. Her breasts were red, discolored, and nodular. A mammogram was done which showed multiple high-density masses scattered in both the breasts (Fig. 1). Interestingly, no implant or implant rupture was seen. Ultrasound (USG) of the breasts was then performed with a high-frequency linear transducer. It showed a snowstorm appearance with multiple tiny cysts and echogenic areas with dirty posterior shadowing. The deeper structures of the breast could not be well evaluated due to the dense shadowing (Fig. 2). No implant or ruptured implant was seen on USG as well, even with a lower frequency transducer. The classic “snowstorm appearance” on USG and mammography helped us narrow down the diagnosis to silicone mastopathy. In this case, the cause was free silicone injection into the breasts rather than ruptured implants. A ruptured implant with an extracapsular spread of silicone would cause similar appearance; however, remnants of the implant would be seen.

In view of extensive breast disfigurement and as the silicone granules cannot be removed piecemeal, this patient was offered a bilateral subcutaneous mastectomy with breast reconstruction. She underwent the surgery with reconstruction in her home country and has been advised a follow-up after 6 months with the breast surgeon.

The use of a free silicone injection for breast augmentation was performed in the 1950s and 1960s. It was later banned by the food and drug administration due to multiple adverse effects including adenopathy, silicone granulomas, and mastitis. It has been replaced by breast implants. However, free silicone injection continues to be performed in some Southeast Asian countries by unscrupulous practitioners [1]. Such patients may present with palpable nodules which typically correspond to the silicone granulomas.

The presence of injected silicone was first discovered on mammography. Mammography is a cost-effective and readily available means of demonstrating silicone. Mammography may

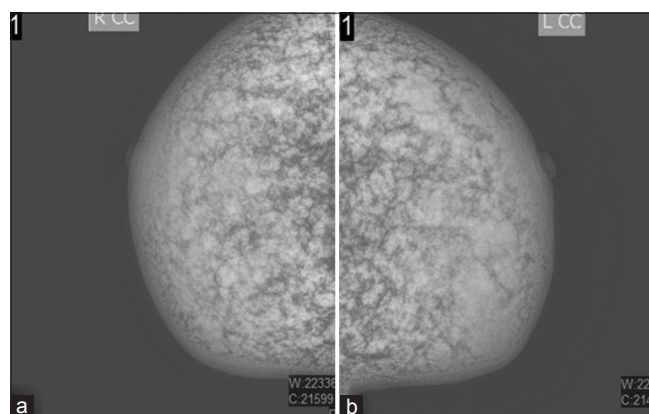


Figure 1: (a) Right mammogram and (b) left mammogram showing multiple high-density masses

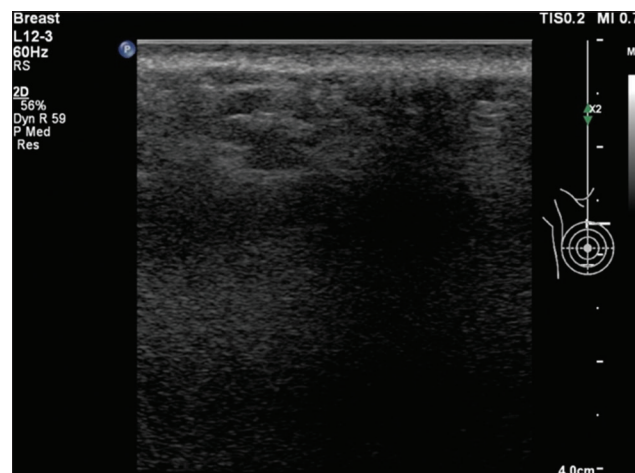


Figure 2: Ultrasound showing classic snowstorm appearance with dirty shadowing and multiple tiny “cysts” corresponding to the free silicone

be difficult to perform in these patients as compression of the breasts is limited because the silicone-injected breast increases in thickness and penetration of the silicone-injected breast require increased radiation exposure. Multiple high-density masses are seen scattered within the breast on mammography which corresponds to the silicone granulomas and are the hallmark of silicone-injected breasts. These may show macronodular, micronodular, and mixed patterns. Silicone granulomas with calcified rims may develop. Another mammographic appearance is a single conglomerate dense mass.

Differentiation of injected silicone from extracapsular rupture of a silicone implant is important. Extracapsular silicone from breast implant rupture usually presents mammographically as larger, rounder globules of silicone that is less numerous compared with injected silicone [1]. Furthermore, the partially collapsed implant will be seen within the breast. USG shows a highly echogenic pattern with multiple tiny cysts and echogenic areas with dirty posterior shadowing with or without hypoechoic masses. On USG, this highly echogenic pattern appears as a “snowstorm” and has a well-defined anterior margin but a poorly defined posterior margin [2].

Similar observations were made by researchers Scaranelo *et al.* in a study where they examined 14 patients with a history of breast injection of liquid silicone by physical, mammographic, and sonographic examination [3]. The high-density silicone and shadowing can also result in missing of a small cancer. Hence, a magnetic resonance (MR) imaging may be required for problem-solving if, the patient presents with a clinically suspicious nodule. Free silicone is seen as hypointense foci on fat-suppressed type 1 (T1)-weighted MR images or hyperintense on water-suppressed T2-weighted MR images. Although utility of MR imaging is well proven in the detection of implant rupture, it is not clear whether MR imaging

is superior to mammography and USG in the detection of free or residual silicone.

The sequelae of free silicone include granuloma formation, fibrosis, and migration. It migrates primarily to local sites, namely ipsilateral chest wall and axillary nodes. More serious consequences are migration into axilla to involve the brachial plexus resulting in neuropathy, migration into more distal regions including the arm and subcutaneous tissues of the abdominal wall [4].

In conclusion, the use of free silicone injection in the breast is an entity with grave consequences which need prompt identification and subsequent optimal management. We must be aware of this unethical practice and also with the utility of imaging which is vital for the diagnosis of free silicone in the breast also to detect its complications.

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Funding: None; Conflict of Interest: None Stated.

How to cite this article: Nagarajan BV, Autkar GM. Storm in a C-cup: A classic case of snowstorm appearance of the breast. *Indian J Case Reports*. 2018;4(5):416-417.

Doi: 10.32677/IJCR.2018.v04.i05.030