

## Breast cancer in a patient with silicone implants

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There are 2 reasons for sonar and mammography evaluation of augmented breasts, namely to rule out malignancy and to assess the integrity of the implant. Silicon implants have been used since 1962 by an estimated 2 million women. Reviewing the literature and our case, there is no increased risk of breast carcinoma. Neither is there an increased risk of diagnosing a more advanced stage of cancer at the time of diagnosis. The available data do not indicate any significant difference between the characteristics of breast cancer in women with breast implants and those of women in the control population.

### Case study

A 57-year-old female patient, a known hypertensive and epileptic, gave a history of feeling a hard left breast mass for 2 days. She had had bilateral silicone breast prostheses implanted for augmentation in 1984 (21 years previously). She also gave a history of trauma to the left breast in 1997, after which she felt hardening of the breast. She did not have any investigations done to determine if the prosthesis had leaked or not.

On examination by a plastic surgeon she was found to have post-pectoral breast prostheses bilaterally, done through a subareola incision. There was severe left capsule contraction with a supra-alveolar hard mass in the left upper outer quadrant. Two lymph nodes were felt in the axilla (pre-pectoral). The right breast demonstrated moderate capsule contraction. No lymphadenopathy was demonstrated on the right. Differential diagnosis of a silicone granuloma or breast malignancy was made. The patient was sent for a sonar and a trucut biopsy of the mass and lymph node was done.

### Sonar findings

A 27 x 11 mm solid, inhomogeneous, markedly hypoechoic poorly outlined, vascular mass was found in the left upper outer quadrant. The mass also showed microcalcifications (Fig. 1). This mass was biopsied. A similar 20 x 12 mm mass was seen in the left axillary tail (Fig. 2). There were also 2, round, well-outlined, solid, inhomogeneous masses in the left axilla, most probably lymph nodes (Fig. 3). The capsule of the prosthesis appeared to be intact. The post-pectoral silicone prosthesis in the right breast was demonstrated and the capsule appeared intact.

### Histological findings

The histological findings on needle biopsy were as follows: no normal breast tissue with dense fibrosis and poorly differentiated infiltrating duct carcinoma. In some areas the tumour was growing in single strands between fibrous stroma. In many focal areas duct differentiation was identified. Oestrogen and progesterone receptor tests were done on the tumour. Oestrogen receptor tests demonstrated strong nuclear positivity in nearly 100% of the tumour cells. Progesterone tests showed a mild



Fig. 1. Inhomogeneous poorly outlined vascular mass in the left upper outer quadrant at two o'clock. Note the microcalcifications. This was the mass that was biopsied.

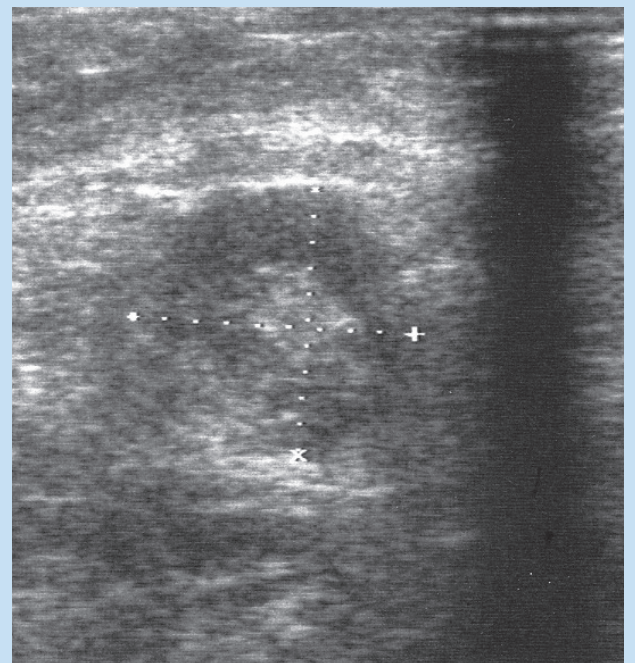


Fig. 2. A similar mass to the one shown in Fig. 1 is present in the left axillary tail (node with a fatty centre).

nuclear positivity in less than 10% of the tumour cells. HER-2/neu was done on the tumour. Approximately 10% of the tumour cells showed interrupted membrane positivity. No premorbid tissue was present. The membrane colouring was in keeping with the count of +1. This can be regarded as negative. The lymph node revealed the presence of metastatic breast carcinoma. Here the duct differentiation was better than in the breast mass.

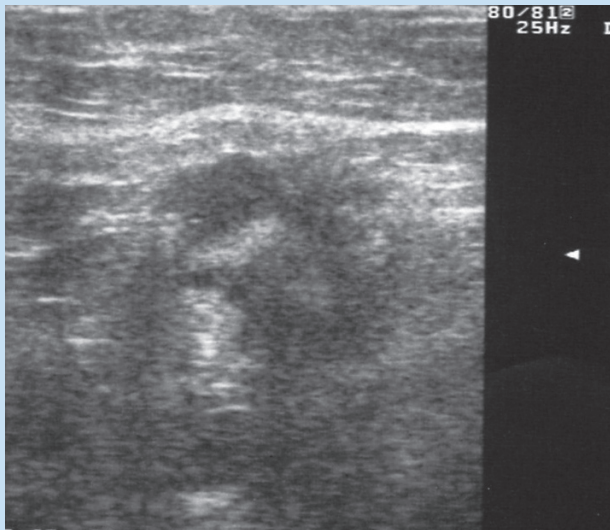


Fig. 3. Two axillary lymph nodes were also biopsied.

## Surgical management

The surgical treatment of a T2,N1, MO lesion was a left (Madden) mastectomy and axillary clearance, and bilateral removal of prostheses was done.

## Discussion

There are 2 reasons for radiological evaluation of the augmented breast. As women with implants are at the same risk for breast cancer as other women, imaging is performed to screen for cancer or to work up clinical abnormalities. Additionally, imaging allows assessment of implant integrity.<sup>1</sup>

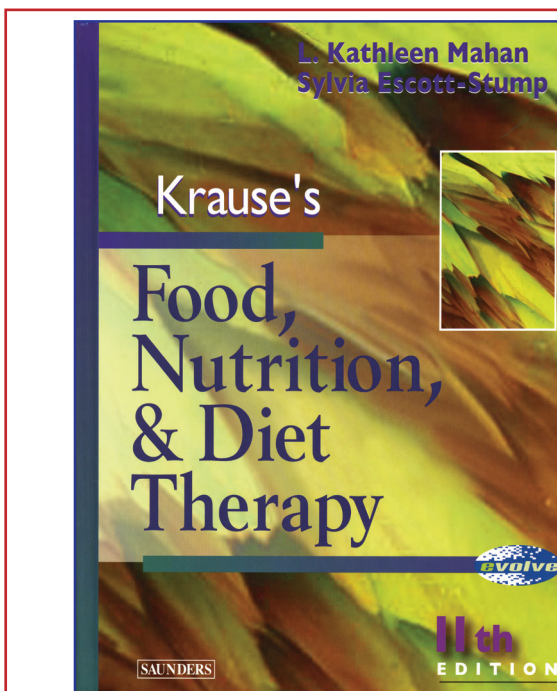
Since their introduction in 1962, silicone gel-filled breast implants have been used by an estimated 2 million people. Questions concerning an increased cancer risk among these women have been raised. A review of the medical literature, including case reports, case series, physician surveys, case-control studies, and cohort studies, failed to turn up any evidence associating the use of silicone breast implants with either an increased risk of breast cancer or an increased risk of a more advanced stage of cancer at the time of cancer diagnosis. The available data do not indicate any significant difference between the characteristics of the breast cancers of women with breast implants and those of women in the control populations.<sup>2</sup>

*In vitro* experiments have demonstrated that cyclosiloxanes can migrate out of breast implants, and in mouse experiments Cyclosiloxanes have been shown to be widely distributed in many organs, causing inflammatory lesions of the lung and liver, as well as liver cell necrosis after a single subcutaneous injection, persisting for at least a year.<sup>3</sup>

## Conclusion

Since 1962 an estimated 2 million women have undergone silicone implants for breast augmentation. There is no evidence of increased risk of breast cancer or a more advanced stage of cancer at the time of diagnosis. There is no difference between the characteristics of breast cancer in women with implants and those of women in the control population.

1. Picolli CW. Imaging of the patient with silicone gel breast implants. *Magn Reson Imaging Clin N Am* 2001; **9**:393-408.
2. Edelman DA, Grant S, van Os WA. Breast cancer risk among women using silicone gel breast implants. *International Journal of Fertility and Menopausal Studies* 1995; **40**: 274-280.
3. Lieberman MW, Lykissa ED, Barrios R, et al. Cyclosiloxanes produce fatal liver and lung damage in mice. *Environ Health Perspect* 1999; **107**: 161-165.



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