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Case Report

Radiology Section

Intracapsular Silicone Breast Implant Rupture Presenting as Axillary Lymphadenopathy: A Case Report

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ABSTRACT

Silicone breast implants are widely used for cosmetic and reconstructive purposes. Despite being designed to reduce complications, they can rupture silently and occasionally present with atypical findings such as axillary lymphadenopathy. We report the case of a 40-year-old woman who underwent bilateral augmentation mammoplasty in 2016 and presented nine years later with a painless, slowly enlarging right axillary lump. Examination revealed firm nodes and mild breast contour distortion. Mammography showed bilateral retroglandular implants with enlarged right axillary nodes. MRI confirmed rupture with characteristic "subcapsular line" sign and "keyhole" sign, without evidence of extracapsular spread. Ultrasound-guided Fine-Needle Aspiration Cytology (FNAC) revealed features consistent with a silicone-induced foreign body reaction. Surgical management included bilateral implant removal with total capsulectomy and excision of enlarged right axillary lymph nodes with intraoperative confirmation of right implant rupture. This case illustrates characteristic imaging features, along with histopathological correlation, both of which are essential for accurate diagnosis and timely management.

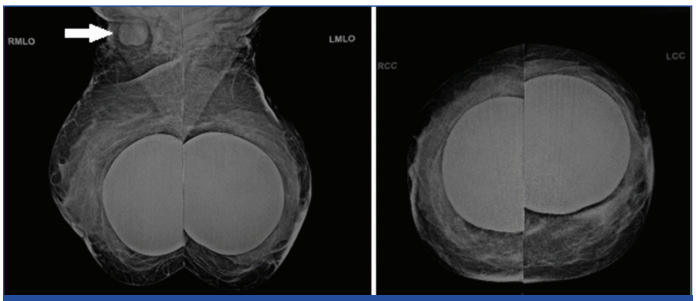
Keywords: Breast implants, Breast plastic surgery, Silicone lymphadenopathy, Ultrasound in breast evaluation

CASE REPORT

A 40-year-old woman presented with a painless lump in the right axilla that had been progressively enlarging over a period of three years. There was no associated pain, fever, trauma, or constitutional symptoms. She was referred to a breast surgeon for further evaluation. On clinical examination, three to four enlarged lymph nodes were palpable in the right axilla. The nodes were firm, mobile, and non-tender. Mild distortion of the right breast contour was noted on examination, although the patient herself had not perceived any change in breast shape over time.

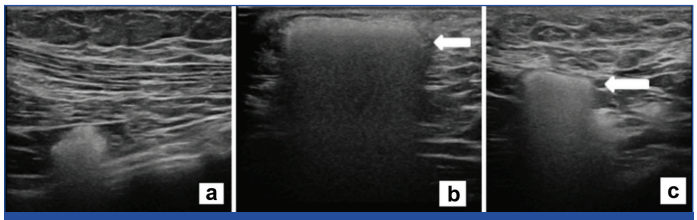
The patient had undergone bilateral breast augmentation in 2016 for cosmetic purposes using round, textured, high-cohesive gel implants of 300 cc. She had no significant comorbidities or family history of breast cancer. Her Body Mass Index (BMI) was 23.5 kg/m^2.

Mammography revealed bilateral retroglandular breast implants with a few hyperdense, enlarged lymph nodes in the right axilla [Table/Fig-1].

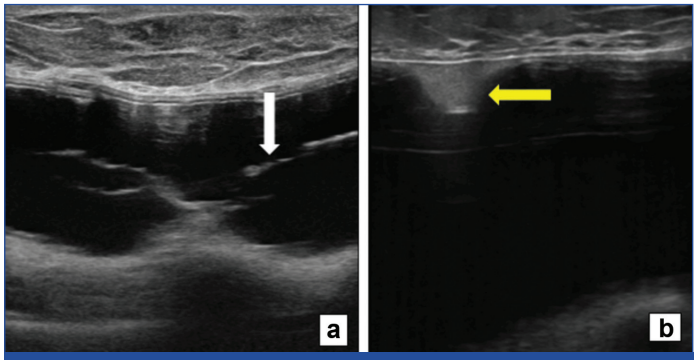


[Table/Fig-1]: Bilateral mammogram (Mediolateral oblique and Craniocaudal projections) demonstrate retroglandular silicone breast implants. Enlarged, rounded, right axillary lymph nodes are visualized (arrow).

High-resolution ultrasound of the right axilla demonstrated multiple enlarged level I and II right axillary lymph nodes, largest measuring 14×9 mm, with thin cortex and echogenic central region producing dense, dirty posterior acoustic shadowing [Table/Fig-2a-c]. The right breast implant showed multiple echogenic lines arranged in a step-ladder pattern within the implant, consistent with intracapsular rupture [Table/Fig-3a]. The left implant maintained shell integrity with only a few small radial folds [Table/Fig-3b]. The left axilla was unremarkable.



[Table/Fig-2a-c]: Ultrasound demonstrated hyperechoic right axillary lymph nodes, casting posterior acoustic dirty shadows resulting in "snowstorm appearance" (Arrow), highly suggestive of silicone lymphadenopathy.

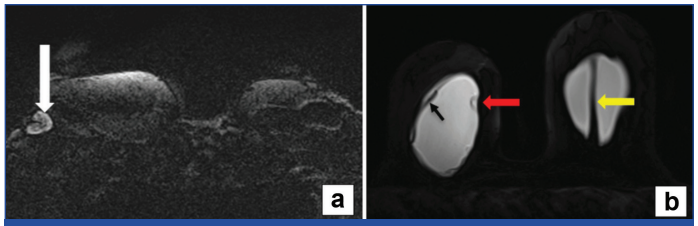


[Table/Fig-3]: (a) The right breast implant demonstrates multiple echogenic internal lines with a characteristic step ladder pattern (white arrow); (b) The left breast implant shows an intact capsule with a radial fold (yellow arrow).

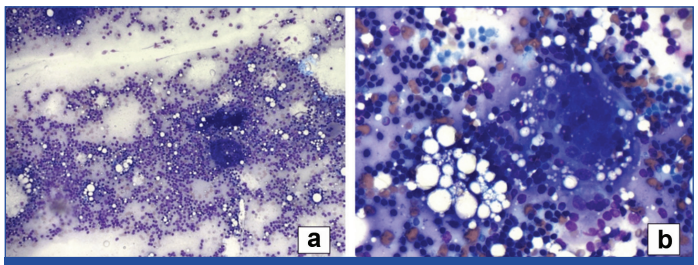
Breast MRI demonstrated the "keyhole sign" and "subcapsular line sign" consistent with intracapsular rupture of the right implant without evidence of extracapsular silicone leakage. The left implant exhibited radial folds, a normal finding [Table/Fig-4].

Ultrasound-guided Fine-Needle Aspiration Cytology (FNAC) of the axillary lymph nodes revealed polymorphous lymphocytes, multinucleated giant cells, and histiocytes in an adipose tissue background [Table/Fig-5].

The patient underwent bilateral implant removal with total capsulectomy and excision of six enlarged level I and II right axillary lymph nodes at another institute. Intraoperative findings confirmed intracapsular rupture of the right breast implant, whereas the left implant shell was intact.



[Table/Fig-4]: Axial silicone sensitive MR sequences of breast: (a) Enlarged right axillary lymph nodes demonstrate signal intensity isointense to the silicone implant; (b) Right breast implant shows the keyhole sign (red arrow) and subcapsular line sign (black arrow), consistent with intracapsular rupture. The left breast implant demonstrates a radial fold (yellow arrow), a normal imaging finding.



[Table/Fig-5]: Fine Needle Aspiration Cytology (FNAC) smears: (a) Low power view (100x magnification); (b) High power view (400x magnification) shows polymorphous population of lymphocytes with foreign body multinucleated giant cells and foamy histiocytes in a background of adipose tissue.

The patient experienced mild postoperative pain in the immediate recovery period, which gradually subsided over the following days. She was discharged on postoperative day seven without wound-related complications or fever. At two-month follow-up, there was complete resolution of discomfort with satisfactory wound healing, and the patient remained clinically stable.

DISCUSSION

Silicone breast implants are widely used in augmentation and reconstructive surgery [1]. Introduced in the early 1990s, highly cohesive gel implants are filled with dense, cross-linked silicone gel designed to retain their shape and minimise leakage, with manufacturers claiming that silicone remains contained even in the event of rupture [2]. Despite these technological advancements, the risk of implant rupture and silicone gel bleed increases with implant age [3]. In a prospective MRI-based surveillance study, Hölmich LR et al., observed that at least 15% of modern silicone implants ruptured between the 3rd and 10th postoperative years, with implant survival declining sharply beyond five years [4]. More recently, in a multicentre high-resolution ultrasound study of 584 women with current-generation silicone gel implants in place for 3-20 years, Salzman MJ documented a silent rupture prevalence of 10.6%, which rose progressively with implant age [5]. Implant surface topography is recognised as a key determinant of long-term outcomes. Textured surfaces, such as those used in the present case, have been associated with a characteristic profile of delayed complications [6]. Silicone gel bleed can occur from both ruptured and intact implants, allowing free silicone to migrate through lymphatic channels to regional lymph nodes, leading to the formation of siliconomas. This process triggers a foreign body reaction characterised by multinucleated giant cell formation and granulomatous inflammation [7,8]. The resulting axillary lymphadenopathy may closely mimic metastatic disease, both clinically and radiologically [9]. The differential diagnosis of axillary lymphadenopathy in patients with breast implants includes reactive lymphadenopathy, granulomatous inflammation, primary malignancy, and silicone lymphadenopathy [10]. Diagnostic confirmation can be obtained through FNAC, core needle biopsy, or open surgical biopsy [11,12]. In the present case, the patient presented with a slowly enlarging axillary mass nine years after augmentation mammoplasty, reflecting the characteristically indolent course of silicone migration.

Published reports of intracapsular rupture of cohesive silicone gel implants presenting with axillary lymphadenopathy remain limited. Lee Y et al., reported a similar case 11 years after augmentation, with MRI showing implant rupture and silicone signal within enlarged axillary nodes, later confirmed as silicone lymphadenopathy on histopathology [10]. Kreitzberg SA et al., described an asymptomatic patient in whom intracapsular rupture was detected incidentally on screening mammography, with contralateral axillary silicone lymphadenopathy attributed to altered lymphatic drainage following prior axillary surgery [11]. Elahi L et al., highlighted the diagnostic challenge of silicone migration involving multiple nodal basins and emphasised the importance of excluding malignancy through multidisciplinary evaluation [9]. A systematic review of 279 cases found that the axillary nodes were the most frequently involved site, with multinucleated giant cells and silicone-laden histiocytes being the characteristic pathological findings [12].

CONCLUSION(S)

High-cohesive gel implants, though considered the most advanced generation, still carry the risk of rupture with silicone leakage. This case underscores the importance of recognising subtle radiological signs of implant rupture, even in asymptomatic patients. A multimodality imaging approach, supported by histopathological confirmation, is essential for distinguishing silicone lymphadenopathy from malignant nodal disease and for guiding appropriate management.

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