

Radiological pitfall: Siliconoma in internal mammary lymph node mimics breast cancer recurrence

Karen Steinke, MD; Phillipa Brook, MD; and Olivier Ramuz, MD

Siliconomas are rarely found in internal mammary lymph nodes in the context of ruptured, ipsilateral, silicone breast implants. However, they can sometimes cause a diagnostic dilemma, as in the presented case. We discuss the diagnostic pitfalls that can arise from misinterpreting a siliconoma for a metastatic lymph node, review the literature, and suggest appropriate diagnostic approaches.

Case report

A 71-year-old woman originally underwent left mastectomy and axillary clearance for a T2-grade invasive ductal carcinoma (IDC) in 1990. None of 34 dissected lymph nodes were involved. The patient did not receive radiotherapy postoperatively. She subsequently underwent a subpectoral reconstruction with a Becker expandable silicone breast implant (Boca Raton, Florida, US) and had yearly mammographic and sonographic followup. In 2009, a new T2, grade-III, multifocal and multicentric IDC with ductal carcinoma in situ (DCIS) and lobular carcinoma in situ (LCIS) were found in her right breast. This resulted in a right mastectomy and level-3 axillary clearance, with one of 19 lymph nodes positive. On the staging CT, two enlarged left internal mammary lymph nodes were found, measuring 1.6 x 2.1 cm (Fig. 1) and 1.1 x 1.2 cm. Given her history, this was thought to be recurrent disease or nodal cross-spread from the newly diagnosed cancer. The CT also showed the ruptured ipsilateral silicone implant (Fig. 2), which the patient was aware of from previous ultrasound imaging (not shown).

As part of the staging, a 20G, CT-guided core biopsy (Speedybell, Biopsybell, Mirandola, Italy) of the enlarged

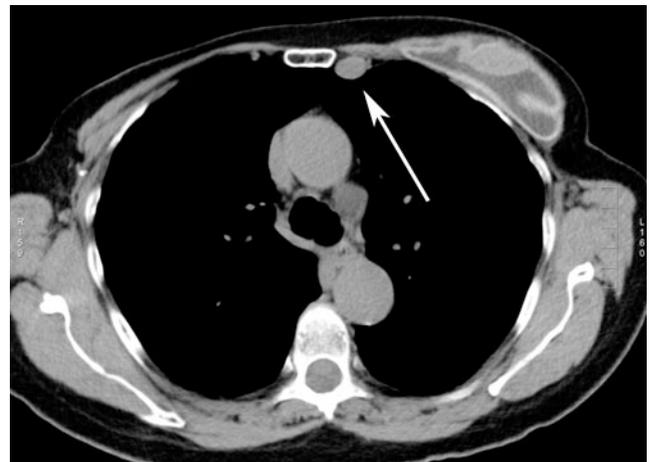


Figure 1. Axial noncontrast CT image showing an enlarged left internal mammary lymph node (arrow) measuring 1.6 x 2.1 cm.

internal mammary lymph node was performed, using a coaxial approach with a single 1 cm throw (Fig. 3). Histology showed a siliconoma (Fig. 4).

Discussion

The median life span of a silicone breast implant is said to be approximately 16.4 years, with 48.7% still intact by this stage. This does not, however, accurately reflect the number of undetected or "silent" ruptures, as in this case (1). Rupture of a silicone breast implant can be either intracapsular or extracapsular. The latter, while less common, can extravasate into surrounding breast tissue, lung parenchyma, chest-wall muscles, and lymph nodes in the axilla

Citation: Steinke K, Brook P, Ramuz O. Radiological pitfall: Siliconoma in internal mammary lymph node mimics breast cancer recurrence. *Radiology Case Reports*. (Online) 2011;6:601.

Copyright: © 2011 The Authors. This is an open-access article distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivs 2.5 License, which permits reproduction and distribution, provided the original work is properly cited. Commercial use and derivative works are not permitted.

Drs. Steinke and Brook are in the Department of Medical Imaging, and Dr. Ramuz in the Department of Pathology, all at the Royal Brisbane and Women's Hospital, Herston QLD, Australia. Contact Dr. Brook at phillipa.brook@uqconnect.edu.au.

Competing Interests: The authors have declared that no competing interests exist.

DOI: 10.2484/rcr.v6i4.601

Radiological pitfall: Siliconoma in internal mammary lymph node mimics breast cancer recurrence

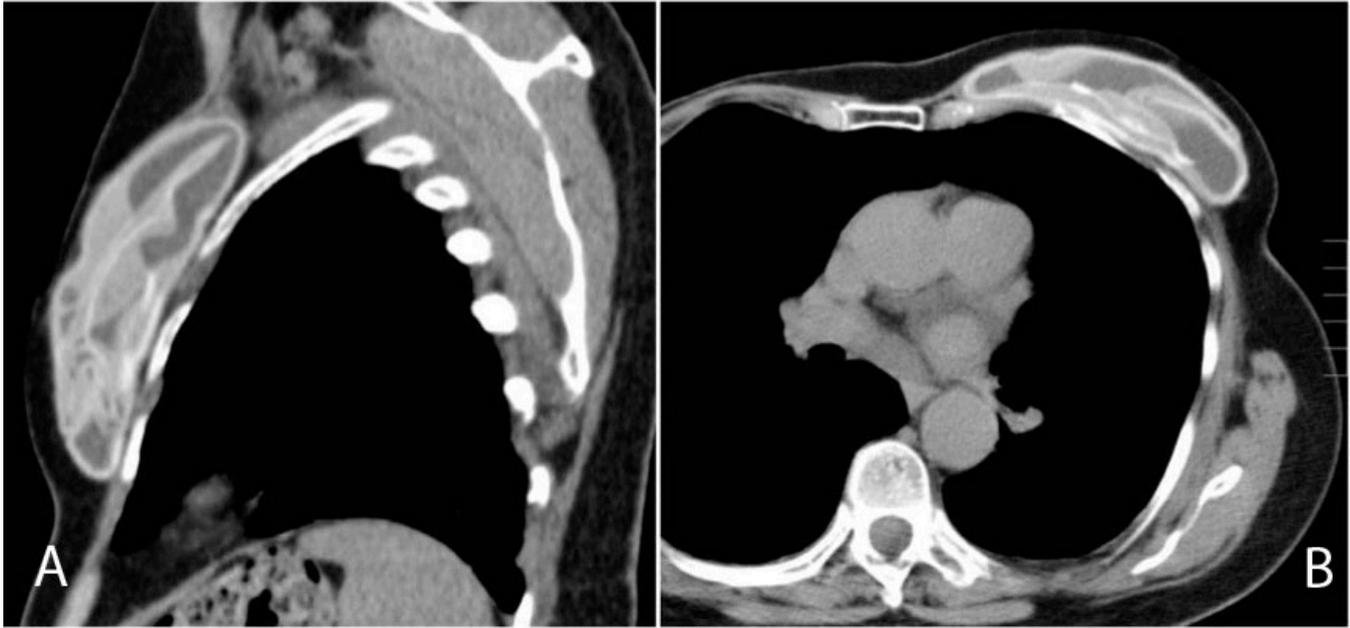


Figure 2. Sagittal (A) and axial (B) noncontrast CT images showing ruptured left silicone breast implant.

and supraclavicular fossa (2-6). Subcutaneous siliconomas have also been reported in more distal areas such as the abdominal wall, inguinal region, and lower limbs (7, 8). There is one published case report of the internal mammary chain as a site of silicone migration and foreign-body granulomatous formation (9).

A study by Chen et al. (10) found breast cancer recurrence in the ipsilateral internal mammary lymph nodes in 1.5% of patients who previously underwent mastectomy. It is important to note that these nodes are rarely excised dur-



Figure 3. Axial noncontrast CT image shows the enlarged left internal mammary lymph node with biopsy needle inside and the intracapsular rupture of the left breast implant (arrow).

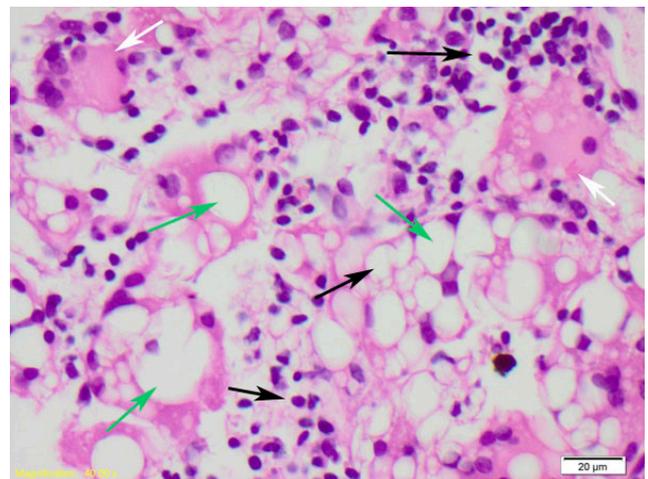


Figure 4. Histology H&E staining 400X magnification: Foreign-body granuloma with macrophages and numerous multinucleate giant cells (white arrows) with large clear cytoplasmic vacuoles (green arrows), highly suggestive of siliconoma. Lymphocytes are black arrows.

ing breast cancer surgery and, as all quadrants of the breast have lymphatic drainage to this area, tumors from any part of the breast can potentially metastasize there (10-13). The internal mammary node chain is therefore a region that must be carefully monitored on followup imaging for breast cancer.

In this case, local lymphadenopathy due to siliconoma is the point of interest. Leaking silicone from ruptured implants may accumulate in draining lymph nodes all across

Radiological pitfall: Siliconoma in internal mammary lymph node mimics breast cancer recurrence

the body. An enlarged internal mammary lymph node in the context of metachronous bilateral breast cancer poses a challenging situation and potential diagnostic pitfall if a siliconoma is misinterpreted as a malignant lymph node.

Selective, silicone-sensitive MRI sequences may help solve this dilemma in a noninvasive fashion. However, if in doubt, a CT-guided or US-guided biopsy may produce an unequivocal diagnosis and thus help allay a patient's fears and apprehension.

References

1. Goodman CM, Cohen V, Thornby J, Netscher D. The life span of silicone gel breast implants and a comparison of mammography, ultrasonography, and magnetic resonance imaging in detecting implant rupture: a meta-analysis. *Ann Plast Surg.* 1998 Dec;41(6):577-689. [\[PubMed\]](#)
2. Holmich LR, et al. Incidence of silicone breast implant rupture. *Arch Surg.* 2003 Jul;138(7):801-6. [\[PubMed\]](#)
3. Ahn CY, Shaw WW. Regional silicone gel migration in patients with ruptured implants. *Ann Plast Surg.* 1994 Aug;33(2):201-8. [\[PubMed\]](#)
4. Lahiri, A, Waters R. Locoregional silicone spread after high cohesive gel silicone implant rupture. *J Plast Reconstr Aesth Surg.* 2006;59(8):885-6. [\[PubMed\]](#)
5. Shipchandler TZ, Lorenz RR, McMahon J, Tubbs R. Supraclavicular lymphadenopathy due to silicone breast implants. *Arch Otolaryngol* 2007 Aug;133(8):830-2. [\[PubMed\]](#)
6. Ismael T, Kelly J, Regan PJ. Rupture of an expander prosthesis mimics axillary cancer recurrence. *Br J Plast Surg.* 2005 Oct;58(7):1027-8. [\[PubMed\]](#)
7. Sagi et al. Silicone breast implant rupture presenting as bilateral leg nodules. *Cl Exp Dermatol.* 2009 July;34(5):e99-101. [\[PubMed\]](#)
8. Capozzi A, Du Bou R, Pennisi VR. Distant migration of silicone gel from a ruptured breast implant. *Pl Reconstr Surg.* 1978 62(2):302-3. [\[PubMed\]](#)
9. Ganau S et al. Silicone Lymphadenopathy: An unusual cause of internal mammary lymph node enlargement. *Breast J* 2008 Sept-Oct;14(5): 502–3. [\[PubMed\]](#)
10. Chen L et al. Internal mammary lymph node recurrence: rare but characteristic metastasis site in breast cancer. *BMC Cancer.* 2010 10:479. [\[PubMed\]](#)
11. Byrd DR et al. Internal mammary lymph node drainage patterns in patients with breast cancer documented by breast lymphoscintigraphy. *Ann Surg Oncol.* 2000 Aug;8:234-40. [\[PubMed\]](#)
12. Chen RC, Lin NU, Golshan M, Harris JR, Bellon JR: Internal mammary nodes in breast cancer: diagnosis and implications for patient management - a systematic review. *J Clin Oncol.* 2008 Oct 30;26(30):4981-89. [\[PubMed\]](#)
13. Veronesi U, Marubini E, Mariani L, Valagussa P, Zucali R: The dissection of internal mammary nodes does not improve the survival of breast cancer patients: 30- year results of a randomised trial. *Eur J Cancer.* 1999 Sept;35(9):1320-25. [\[PubMed\]](#)