

Fat Necrosis Simulating Breast Malignancy Following Reduction Mammoplasty: A Case Report¹

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Fat necrosis is well depicted on imaging by characteristic findings such as oil cysts. However it may be rarely indistinguishable from carcinoma clinically and radiologically, and require biopsy for diagnosis. We report a case of fat necrosis simulating malignancy following reduction mammoplasty. The screening mammogram of a 63-year-old woman, who had received bilateral reduction mammoplasties 10 months previously, showed an irregular high-density lesion with a spiculated margin in the upper inner quadrant of the left breast. Ultrasonography revealed a 1.5 cm sized, ill-defined, and irregular hypoechoic lesion with posterior acoustic shadowing. The confirm diagnosis was fat necrosis, by ultrasonography-guided core needle biopsy. On the 6-month follow-up ultrasonography, the lesion was found to have decreased in size.

Index words : Radiography
Fat, necrosis

Fat necrosis is a relatively common benign disease that can be the result of trauma (iatrogenic or noniatrogenic) or may have an idiopathic cause (1). Reduction mammoplasty also invokes extensive soft tissue injury and this occasionally leads to fat necrosis. Fat necrosis is often depicted on mammography as characteristic round calcifications with lucent centers (oil cysts) or as dense amorphous solid calcifications (2). On occasion, however, fat necrosis may have atypical imaging and physical examination features that are indistinguishable from malignancy (3). We report a case of fat necrosis simulating malignancy by mammography and ultra-

sonography, which developed in the breast following reduction mammoplasty.

Case Report

A 63-year-old woman was referred to our hospital due to an abnormal density on a screening mammogram. The patient had received bilateral reduction mammoplasty 10 months previously. The mammogram taken before the mammoplasty showed almost entirely fatty breasts without focal mass or clustered microcalcifications. She has been receiving estrogen therapy for 2 years. The mammogram taken on referral revealed an irregular high density with a spiculated margin in the left upper inner quadrant (Fig. 1). Ultrasonography showed a 1.5 cm sized, ill-defined, and irregular hypoechoic lesion with posterior acoustic shadowing at the 10 o'clock position in the left breast, 3 cm away from the nipple (Fig. 2). Because of this suspicious imaging finding, ultrasonography-guided core biopsy using a 14-

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Received July 23, 2004; Accepted September 16, 2004

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gauge needle was performed (Fig. 3). A microscopic examination showed aggregates of fat with dense fibrosis and inflammatory cells, suggestive of fat necrosis (Fig. 4). There was no evidence of malignant cells. On the 6-month follow-up ultrasonogram, the lesion was found to have decreased in size (Fig. 5).

Discussion

Reduction mammoplasty is increasing in popularity, and is usually performed for bilateral macromastia or for symmetry after mastectomy and breast reconstruction. Reduction mammoplasty involves elevating the nipple and resecting the skin and glandular tissue from the inferior aspect of the breast (4). The procedure creates scars, fibrotic tissue and alterations in the involved tissue, such as architectural distortion, hematomas, neocalcifications, or skin thickening that may in some cases mimic a pathologic condition (5). Fat necrosis after reduction mammoplasty has been reported in up to 10%-20% of cases (5, 6). Fat necrosis is of clinical concern because it is difficult to distinguish from carcinoma on both physical examination and radiologic images.

The process of fat necrosis results from aseptic saponification of fat by blood and tissue lipases (7). These lesions may contain both oily fat and hemorrhagic or serosanguineous fluid within the same compartment, as in oil cysts, which result in a fat-fluid layer effect (1).

This can be seen most often in the periareolar and inferior portions of the breast, where most surgical dissec-

tion occurs. Our patient, however, revealed fat necrosis in upper inner quadrant of the breast. Dissection for flap raising disrupts blood vessels and causes fat necrosis (8). Mandrekas et al suggested that the use of electrocautery during breast reduction might be a main cause of fat necrosis (9).

Mammographic features associated with fat necrosis range from lipid cyst to findings suspicious of malignancy (3). Oil cysts have been described as the most charac-

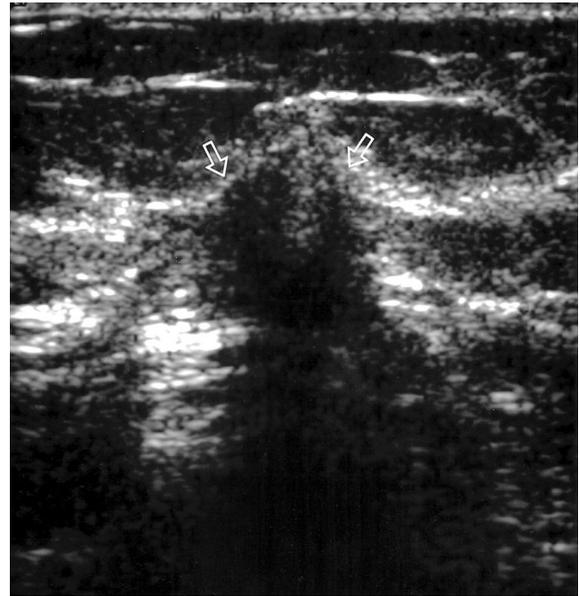


Fig. 2. Ultrasonogram of the left breast revealing a 1.5 cm sized, ill-defined, and irregular hypoechoic lesion with posterior shadowing (arrows) in the 10 o'clock position in the left breast, 3 cm away from the nipple.

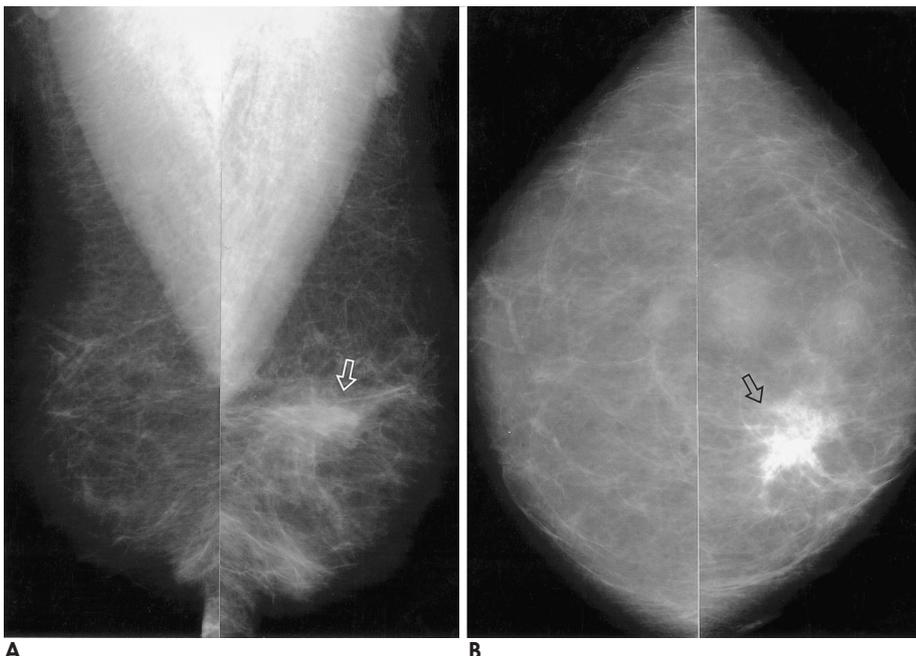


Fig. 1. A, B. Mediolateral oblique (A) and craniocaudal (B) mammograms showing irregular high density with a spiculated border in the left upper inner quadrant (arrows).

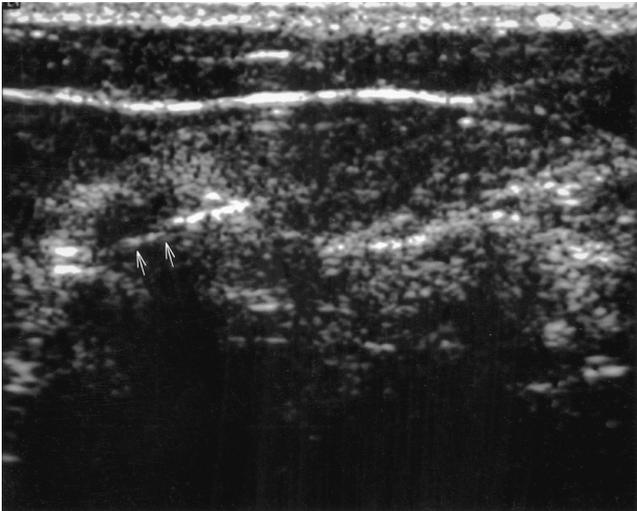


Fig. 3. Ultrasonogram confirming that the needle (arrows) traversed the mass.

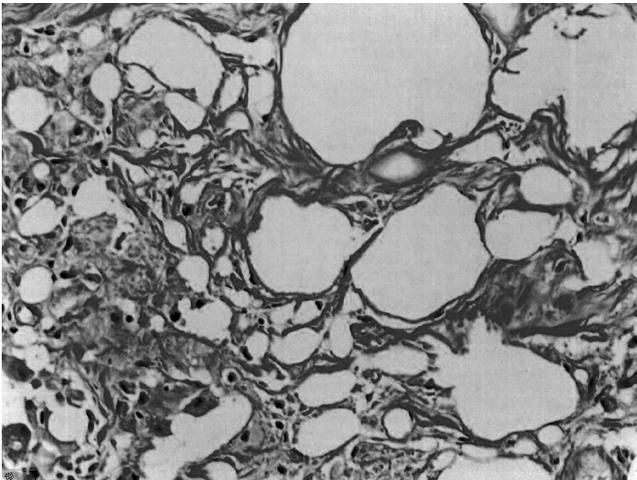


Fig. 4. Photomicrograph of a biopsy specimen revealing aggregates of fat with fibrosis and inflammatory cells, suggestive of fat necrosis (H & E, $\times 200$).

teristic lesion associated with fat necrosis (6, 9). Fat necrosis uncommonly manifests as focally clustered, pleomorphic microcalcifications that are mammographically indistinguishable from those of malignancy (3). It also appears as an ill defined or spiculated area of increased opacity where fibrosis predominates and produces a desmoplastic response similar to that seen in scirrhous carcinoma (10), and should be included in the differential diagnosis of a spiculated mass in addition to carcinoma, radial scar, and postbiopsy change (3).

By ultrasonography, small anechoic, well-defined subcutaneous lesions, which release a yellow oily fluid on aspiration, represent the oil cysts that are found in typical fat necrosis (9). Soo et al (1) demonstrated a wide

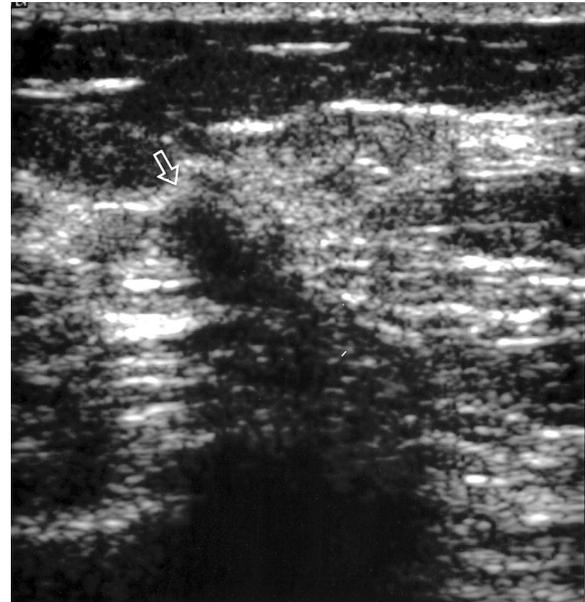


Fig. 5. Six months follow-up ultrasonogram of the left breast revealing a reduced lesion size, from about 1.5 cm to 1.0 cm in diameter (arrow).

range of the sonographic features of fat necrosis, which included cystic, complex, and solid appearing masses with circumscribed or ill-defined margins, often associated with distortions of the normal sonographic architecture. Moreover, distortion of parenchyma may be confused with scarring in postsurgical cases (1, 9).

Short-term follow-up with imaging and physical examination rather than immediate biopsy has been recommended, because within a year after reduction mammoplasty parenchymal distortion and skin thickening subside and the breast achieves a new baseline appearance (9). Nevertheless, if a lesion has a suspicious imaging appearance, a biopsy is necessary for confirmation.

The radiologist should be aware of imaging findings of fat necrosis mimicking malignancy following reduction mammoplasty. Although breast imagings reveal suspicious findings in patients that have received reduction mammoplasty, a result of fat necrosis on needle biopsy may be acceptable, and short-term follow up (at 6 months) with imaging rather than surgical intervention is recommended.

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2004;51:573 - 576

