

The red herring – Developing density

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Section: Breast imaging

Imaging Technique: MR

Case Type: Clinical Cases

Authors: Ilie I.Craciun MD

Patient: 59 years, female

Clinical History:

No history of breast cancer – Routine mammography

Imaging Findings:

Married - 2 children <> Last period 10 years ago <> No family history of breast cancer <> No personal history of breast cancer <> No hormone replacement therapy <> Right breast surgical biopsy 5 years ago – benign <> 1988 mammography for right breast pain <> 1989 mammography for suspected right breast mass <> 1991 routine mammography

Discussion:

Breasts are fairly symmetric organs. They might differ in size but their inner structures are mostly symmetric. The observer is often in the situation of deciding if a given asymmetry within a examination is due to a difference in positioning or it is a real finding. To be significant, asymmetry should be three dimensional, should be viewed in both projections and should be stable even on spot compression films. ASYMMETRIC BREAST TISSUE is a normal variant. It has not a center, it is stable over time, there is no architectural distortion accompanying it and can not be detected by clinical examination. It may be found in about 3% of the investigated population, mostly in the upper outer quadrant of the breast. Ultrasound examination of this finding has not been shown to add any clinically useful information, as long as there is no reason to suspect a mass in the region.[1] NEODENSITY on the other hand, even without well defined margins or center, even when not seen in both projections, but which is stable on spot compression films, should be viewed with suspicion and further investigated. DEVELOPING DENSITY should be regarded as an abnormal process since breast is an involuting organ, process which starting for most women in their 30s. Breast density may grow, sometimes unhomogeneously during hormone replacement therapy or in cases when the patient loses a significant amount of weight and therefore a significant amount of fat from her breasts. It have to be pointed out that Invasive Lobular Carcinoma is acknowledged as a cause for unhomogeneous densities interspersed with breast tissue, without microcalcifications and only in late stages accompanied by architectural distortion. FOCAL ASYMMETRIC DENSITY if not proved to be an island of benign breast tissue, is an abnormal process, mostly due to a mass with ill defined margins, a denser center, seen in both projections and stable on spot compression views.[2] It might represent almost 14% of the probably benign lesions discovered at screening but only 0.4% of them prove to be cancers.[3] From what was said up to this point, it is clear that besides spot compression films, one of the most important methods at our disposal in clarifying the nature of a density or any other mammographic finding, is the COMPARISON WITH PREVIOUS MAMMOGRAMS. Using previous mammograms in the diagnostic process may be rewarding in two ways. One of them is that as it had been shown, fewer incorrectly abnormal screening interpretations are made when previous examination films are available for comparison. The other benefit from comparing mammograms with previous examinations is that the yield of the

biopsies performed on lesions found by second mammogram, grows by 10% when comparison is made with the previous study. The lesions removed are smaller and they are in an earlier stage. There is an impression that the percentage of negative lymph nodes is higher for the lesions discovered at the second screening.[4] Comparison with previous films should be performed whenever they are available and it should be performed with ALL previous films, not only with the last examination. N.B. – The case brought to illustrate the problem of asymmetric and developing density, is also a case of misinterpretation of the mammographic reports. In spite of the fact that the findings within the right breast were reported as suspicious, based on clinical findings only, the surgeons decided to clinically follow-up the patient. Only 14 month following the last mammogram the patient had a surgical biopsy followed by completion mastectomy and lymph node dissection.

Differential Diagnosis List: Invasive Duct & Lobular Carcinoma – Pappilomatosis – 2 positive lymph nodes out of 14

Final Diagnosis: Invasive Duct & Lobular Carcinoma – Pappilomatosis – 2 positive lymph nodes out of 14

References:

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Focal asymmetric density

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Sickles EA (1991)

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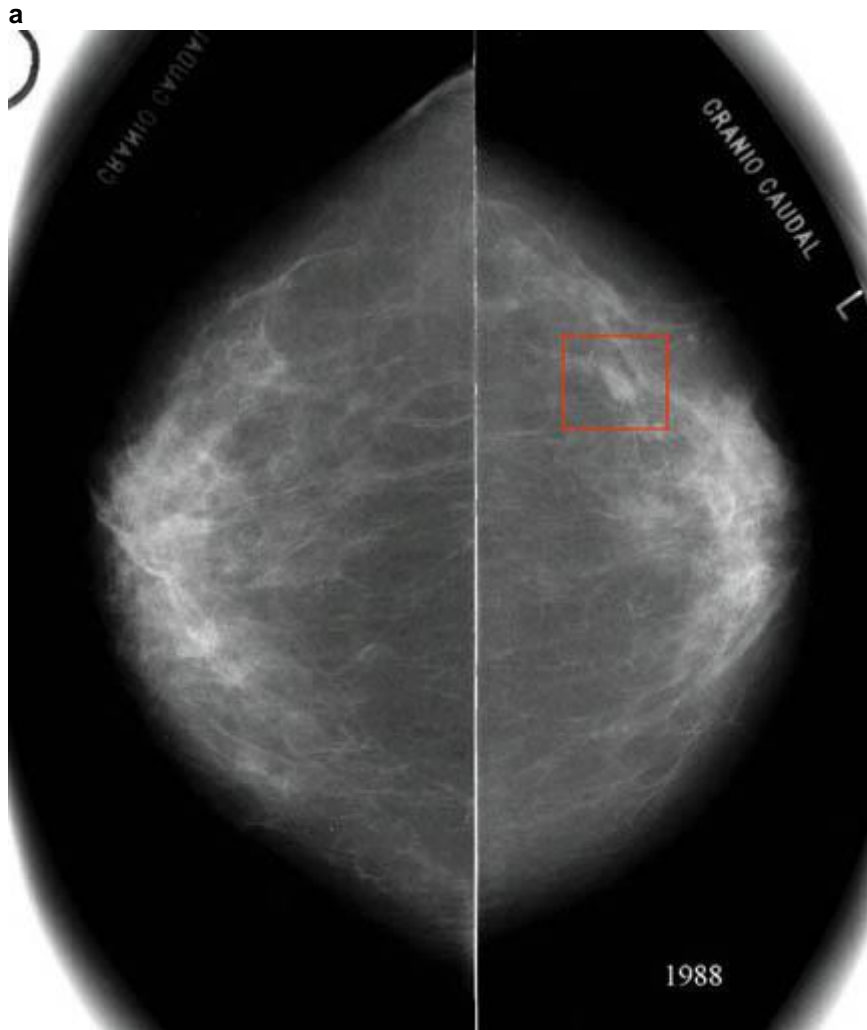
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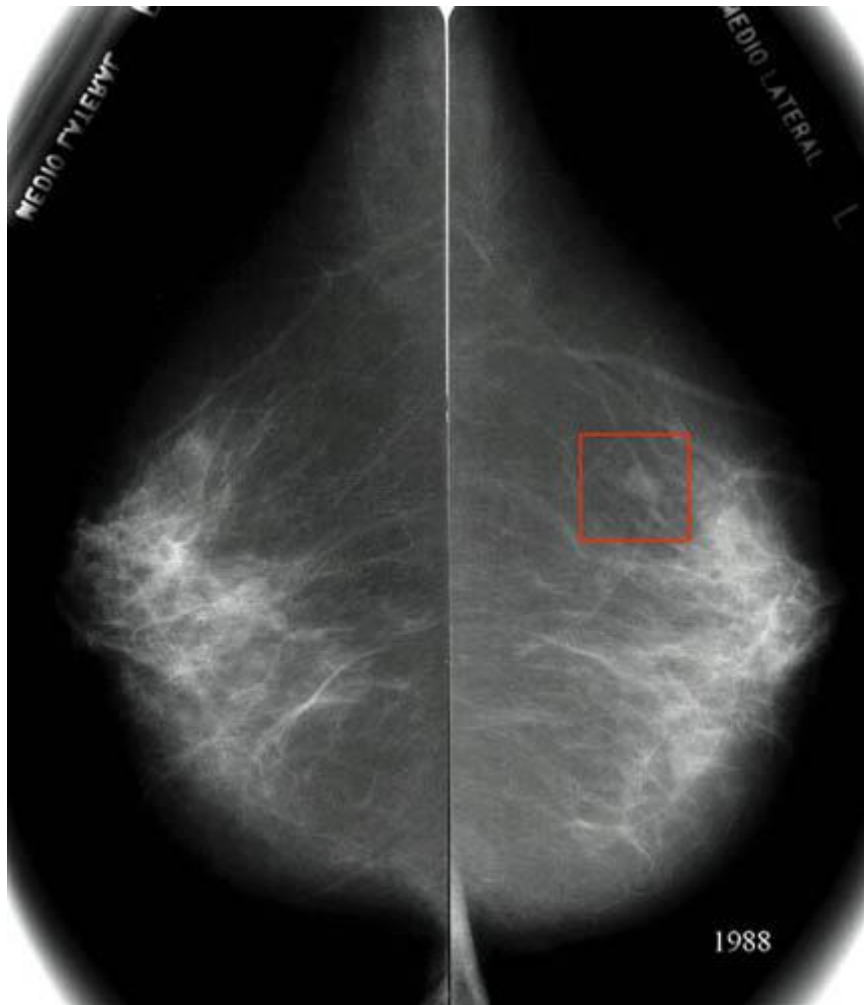
Figure 1



Description: – Cranio-caudal projections – Mostly fatty breasts with some fibroglandular tissue behind the areola. There are no dominant masses, no microcalcifications or architectural distortion. The skin is normal. A small oval mass, growing with the long axis toward the nipple is noted within the lateral part of the left breast. The mass is homogenous, mostly well defined and its longest axis measures 10 mm.

Origin:

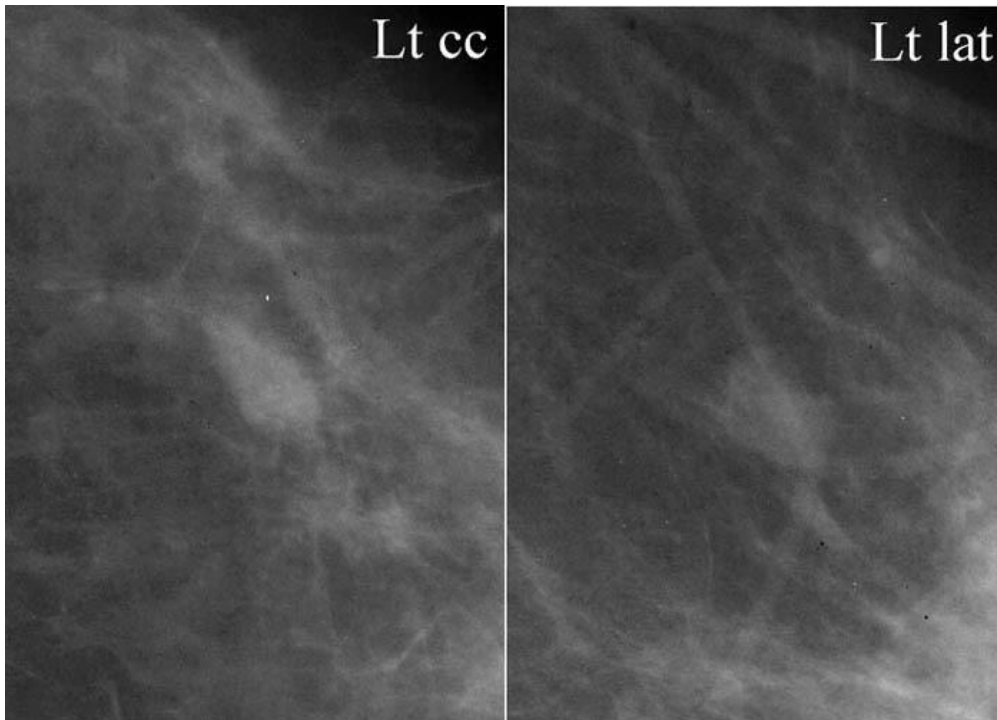
b



Description: Lateral projections – True lateral projections of the breasts, standard position at the time, shows the same breast composition, with the fibroglandular tissue distributed mostly behind the areola. Again, no suspicious finding is noted, except for the small mass in the upper part of the left breast, disposed along the fibrotic breast lines. A small amount of asymmetric breast tissue is probably present within the lower part of the left breast, but it doesn't show any suspicious characteristic. **Origin:**

Figure 2

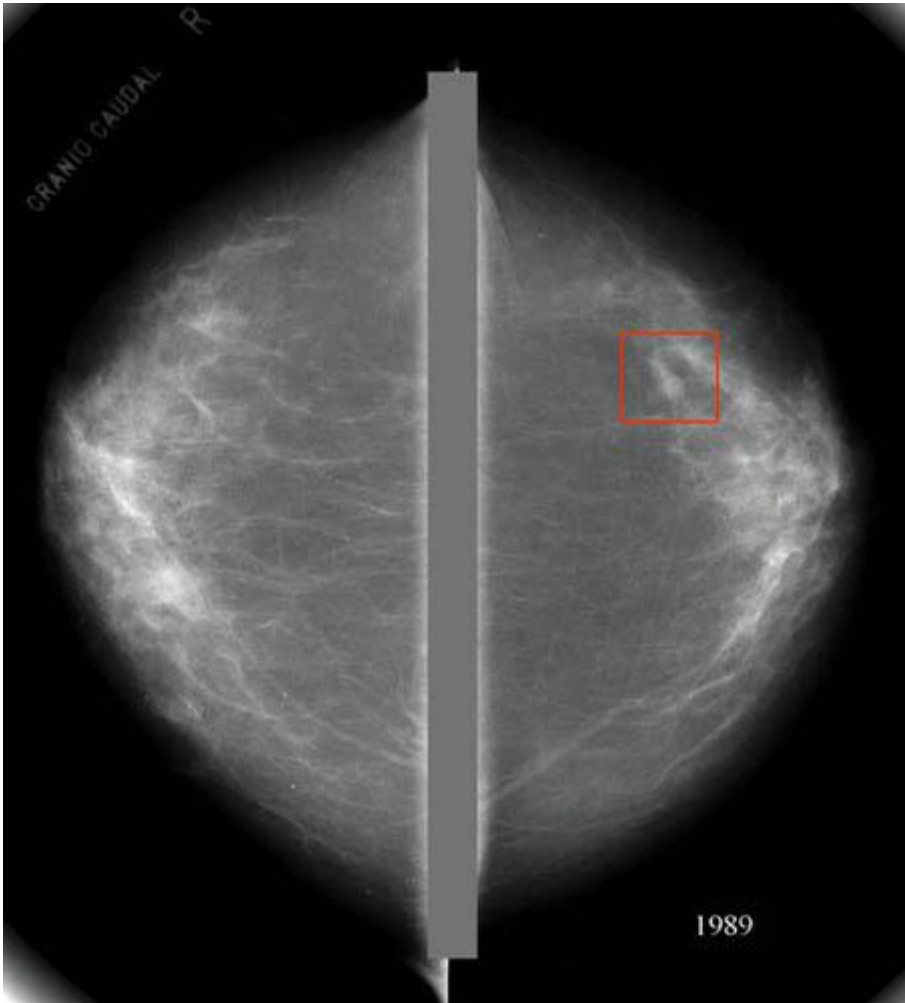
a



Description: Digital enlargement of the mass, in both projections, corresponding to a closer look, through a magnifying lens, shows that the finding is pretty well defined, with somewhat knobby and partially blurred margins. At the time, the examiner felt that a small mass of low density and arranged along the fibrotic structures of the breast, does not represent a real threat and recommended annual follow-up. **Origin:**

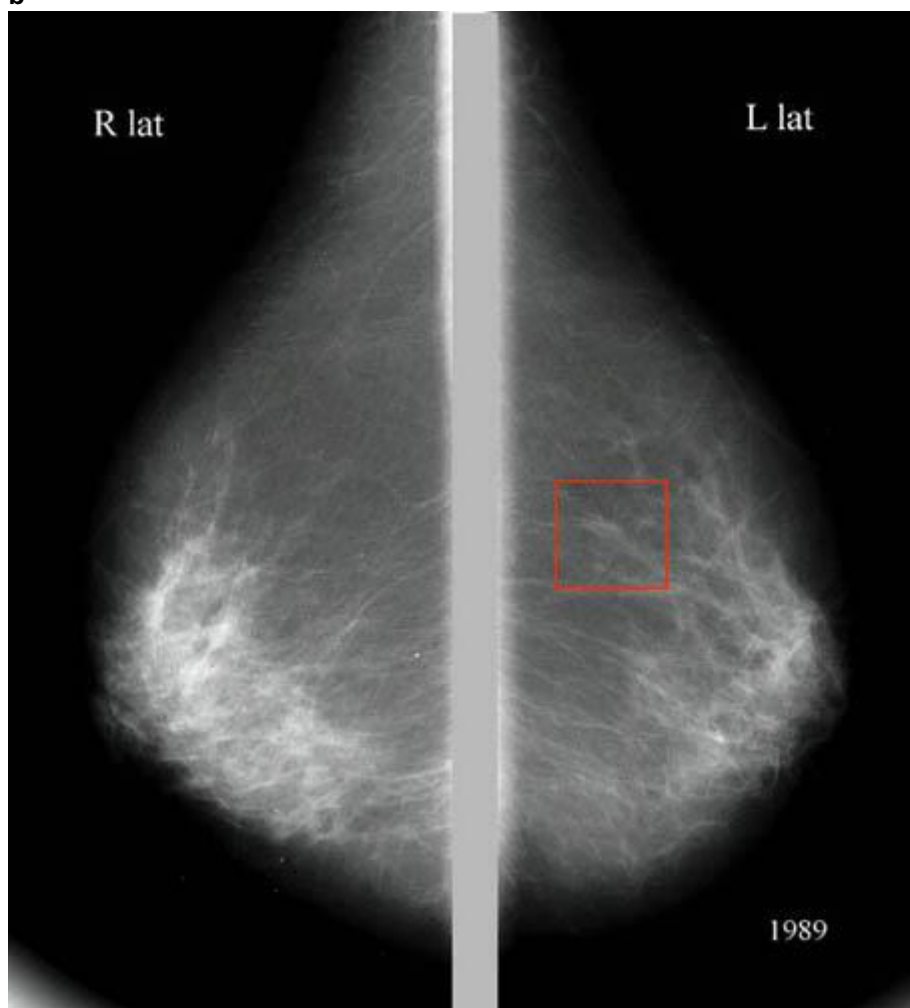
Figure 3

a



Description: Cranio-caudal projections – One year later, no definite changes may be noted. Even the small mass within the left breast does not show any notable changes and probably looks smaller and less dense. **Origin:**

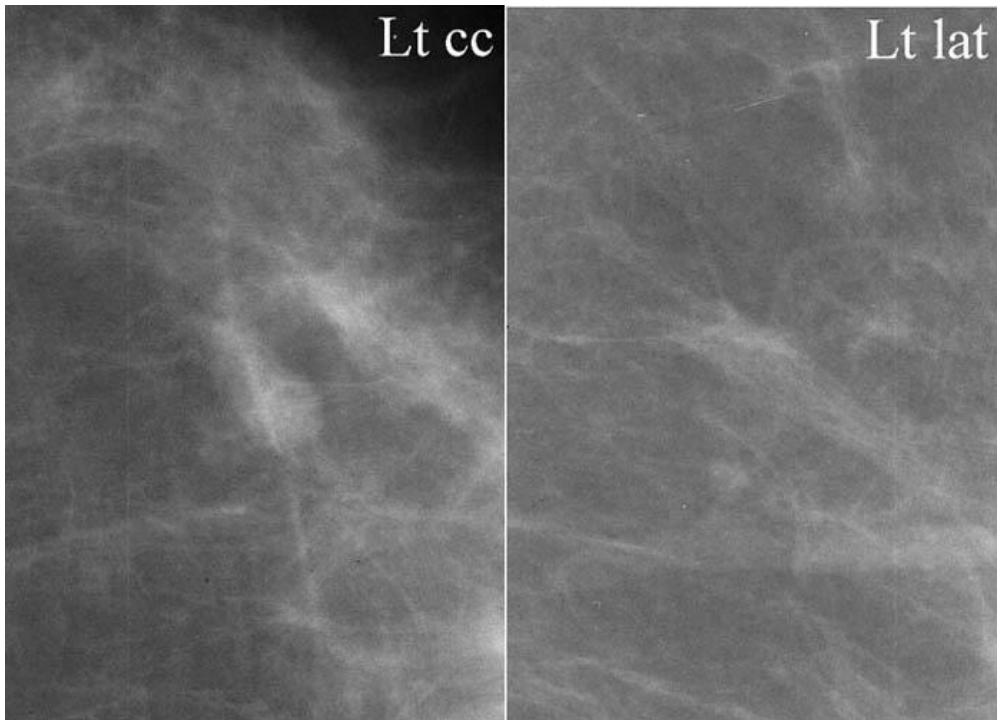
b



Description: Lateral projections – Again, lateral projections of both breasts, showing no changes from the previous mammogram. The small mass is only hardly visible. The asymmetry of the breast tissue was attributed to the underexposure of the left breast **Origin:**

Figure 4

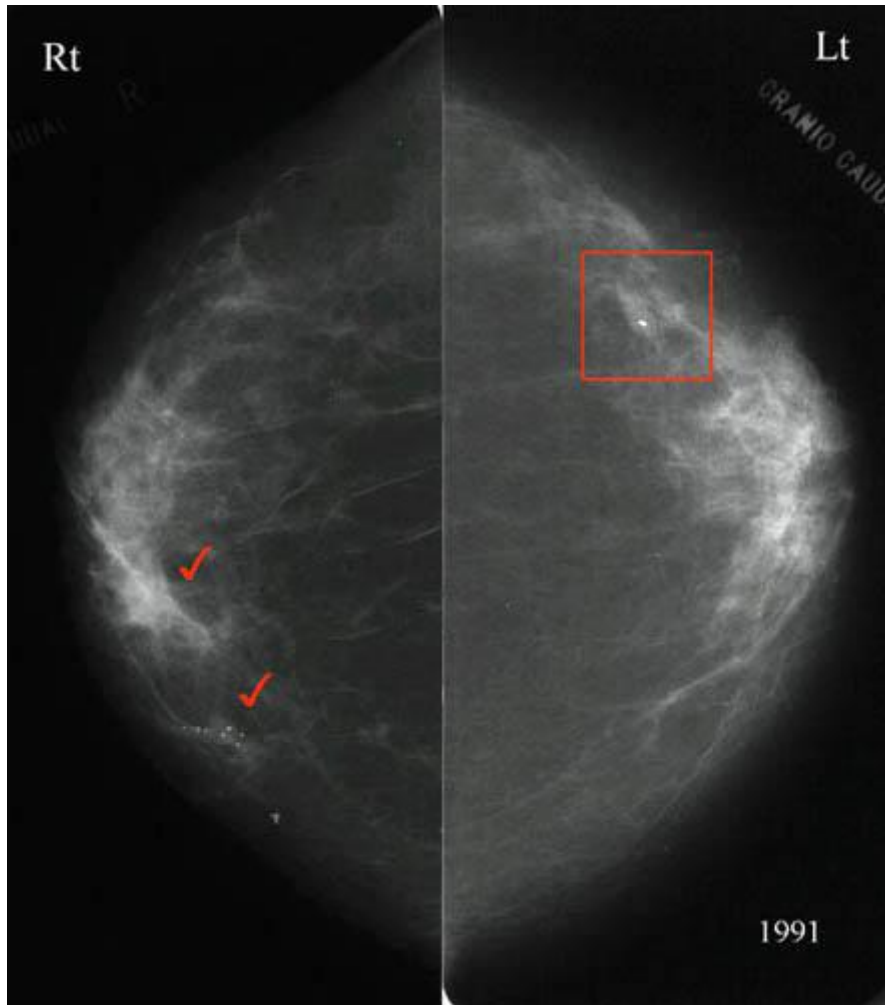
a



Description: The upper outer quadrant mass has almost disappeared. It looks smaller, less dense compared with previous mammogram and its borders are well defined. In the lateral projection it can be hardly identified. The mammogram was interpreted as normal and again, annual follow-up, was recommended. **Origin:**

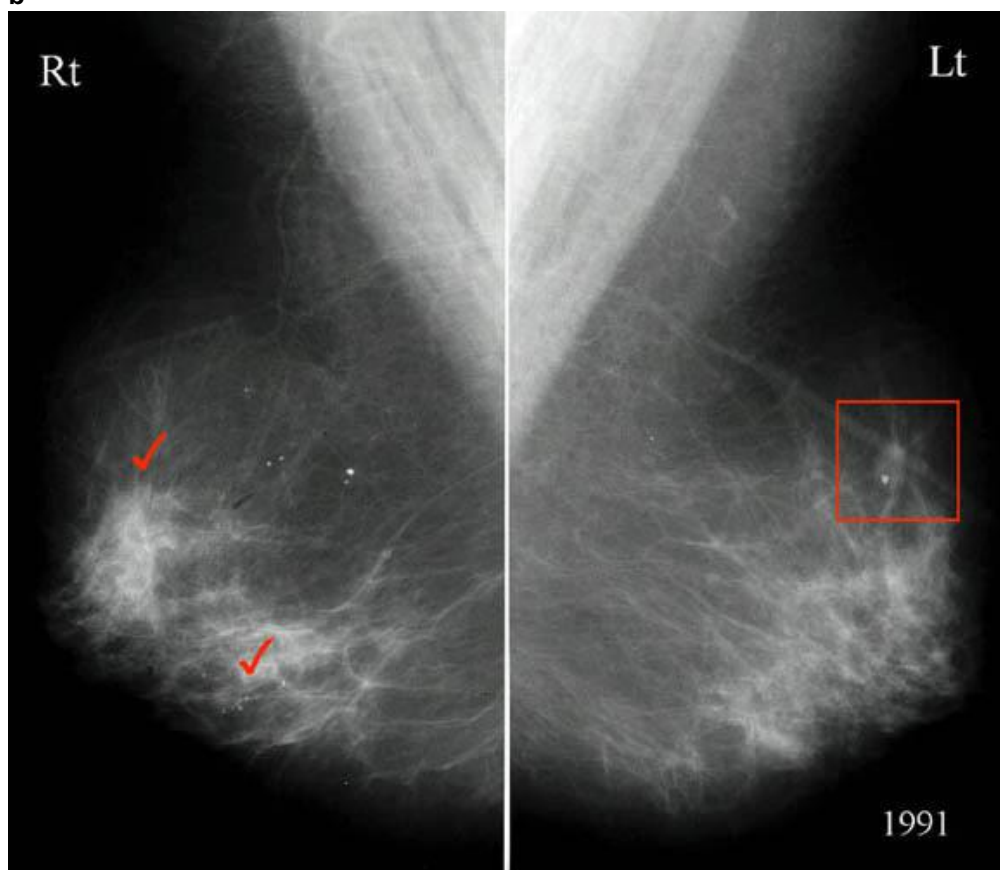
Figure 5

a



Description: Cranio-caudal projections – Few changes may be noted, compared with the last mammogram, performed two years ago. The mass we were concerned about, hasn't changed in size, nor its borders had changed, but now a somewhat coarse calcification may be seen within it. The right breast though, has changed a lot. Some granular microcalcifications, arranged in a ductal pattern, may be seen in the inner part of the breast and more than that, a region of dense breast tissue, asymmetric, may be seen just medial to the nipple. **Origin:**

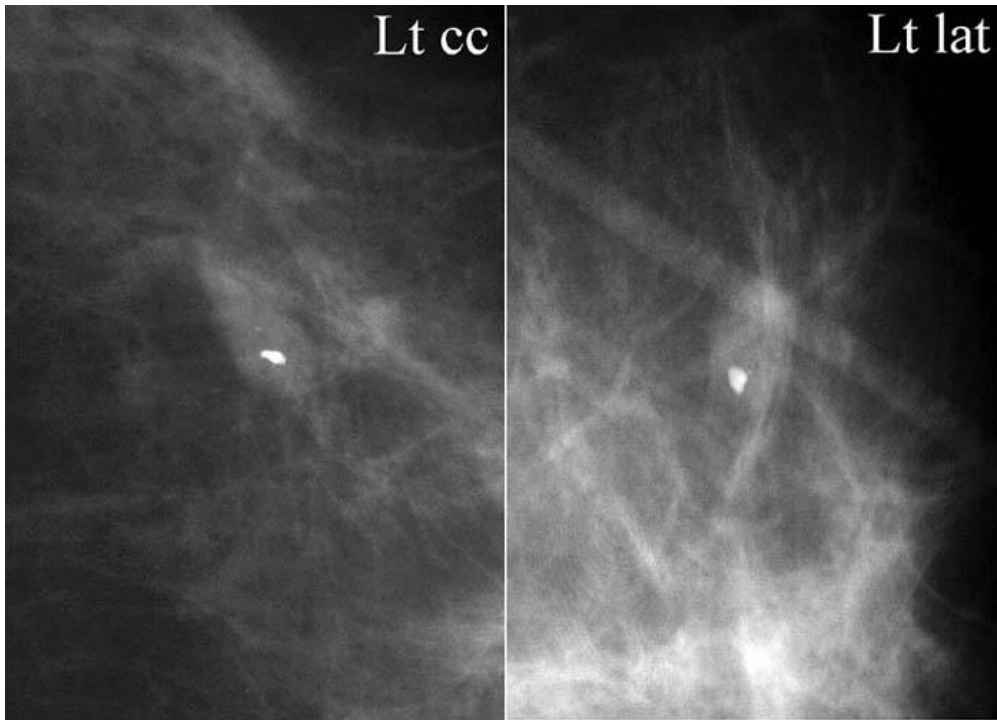
b



Description: ML Oblique projections – Even in this projection, the small left breast mass shows no changes, except for the coarse calcification within it. The right breast shows the asymmetric neodensity behind the nipple and the granular calcifications disposed in a ductal pattern, in the lower part of the breast. Some small calcifications are seen isolated, deep in the center of the breast. **Origin:**

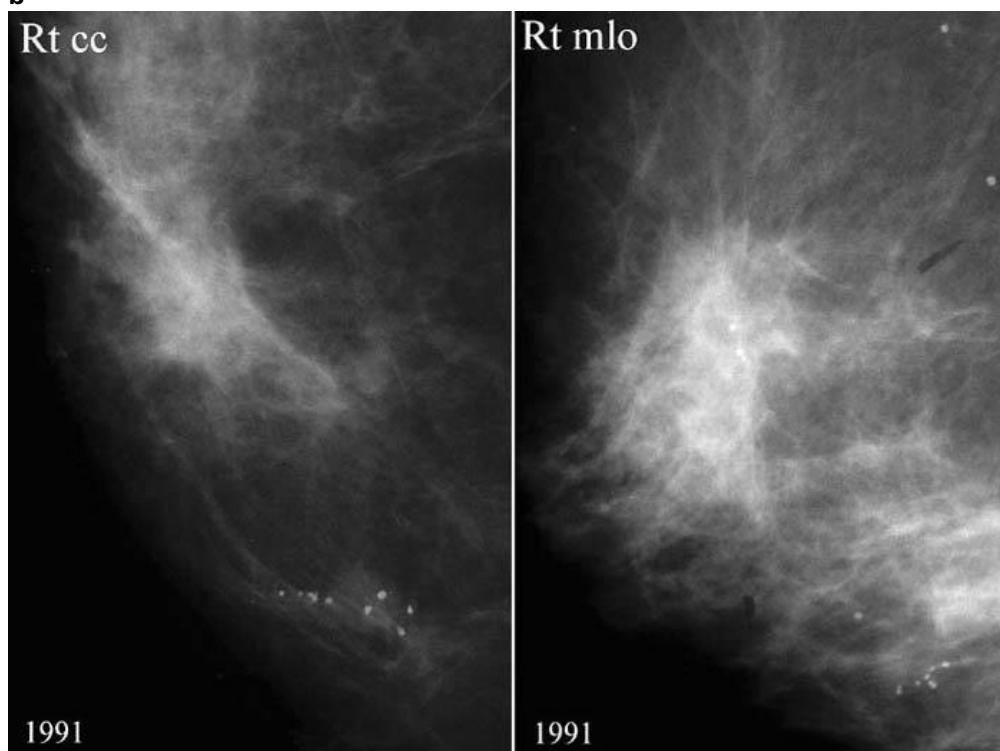
Figure 6

a



Description: Digital enlargement of the left breast mass shows it without any change from the previous mammograms, except for the coarse calcification within it. It was interpreted as a small fibroadenoma and no further attention was accorded to it. **Origin:**

b

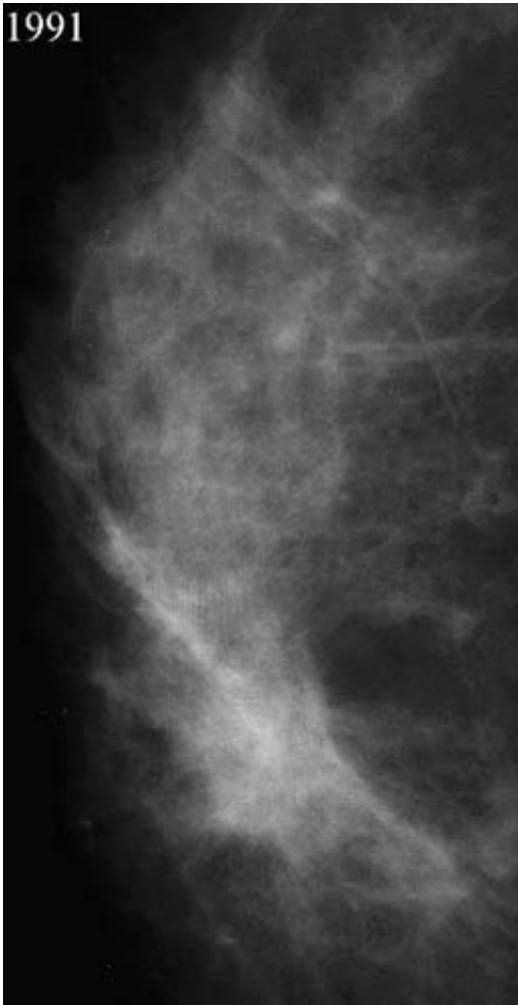


Description: Detail of the suspicious findings on the right breast shows granular calcifications dispersed within the inner lower quadrant and retroareolar area of the right breast. Some of them are arranged in a ductal pattern. The significance of this finding is not clear. On the other hand, the retroareolar breast tissue, looks denser and probably distorted. No definite mass is noted and the lesion can not be precisely identified in the other view. **Origin:**

Figure 7

a

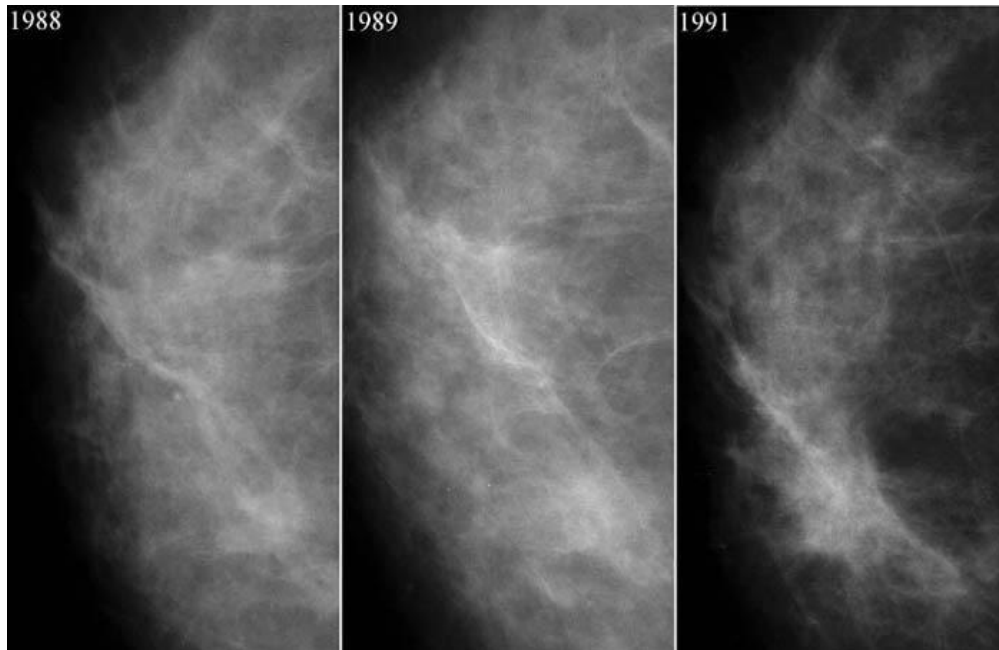
1991



Description: Dense fibroglandular tissue in the retroareolar area. No masses with definite borders or a center with increased density may be noted in the area. A region of denser breast tissue mixed with fat, accompanied by some architectural distortion and probably spiculations may be suspected. No microcalcifications are attached to the finding. **Origin:**

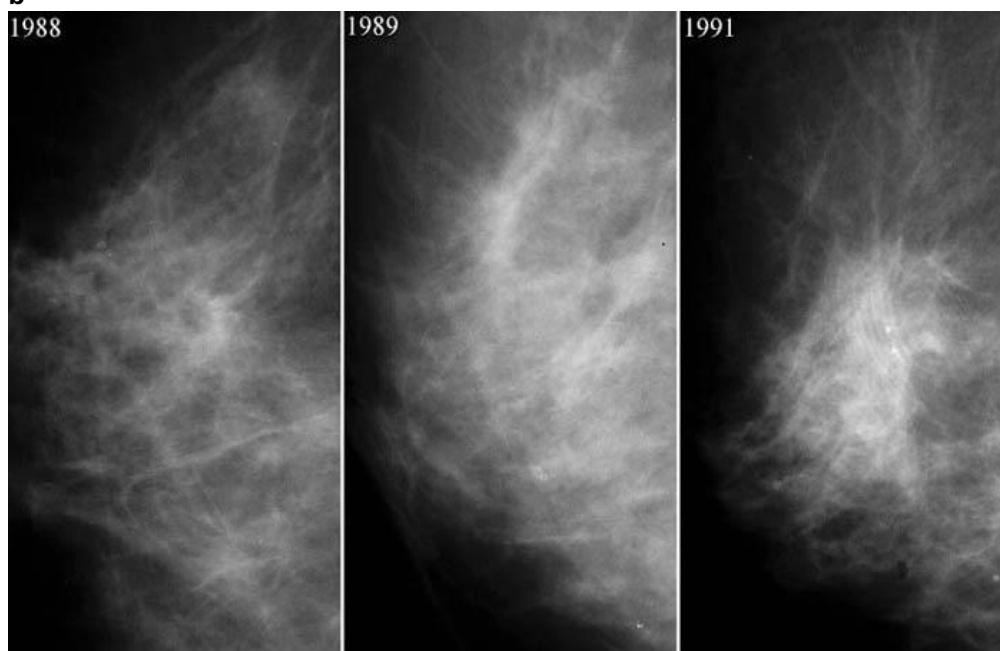
Figure 8

a



Description: An evolving picture of the cranio-caudal projections, shows the density in the inner half of the breast, growing from normal fibroglandular breast tissue to a breast density. The difference is obvious when seen in evolution and it is identifiable in the last mammogram compared to the previous one, taken two years before. Prospectively, it is not possible to assign a pathologic meaning to the change between the first two mammograms. **Origin:**

b



Description: Comparative view of the lateral-oblique projections. Although different projections, in accordance to the development of the mammographic technique, there is an obvious increase in the density of the breast tissue in the retroareolar area. It can be said that on the '89 picture some increase in density and an impression of spiculations can be retrospectively noted, but at the time and correlated with the CC views, this very discrete changes were not appreciated. The last picture, from '91 shows with clarity the neodensity, mixed with fat, which evolved slowly over three years **Origin:**