Indication: Screening.
History: Unremarkable.
Risk profile: No increased risk.
Age: 53 years.

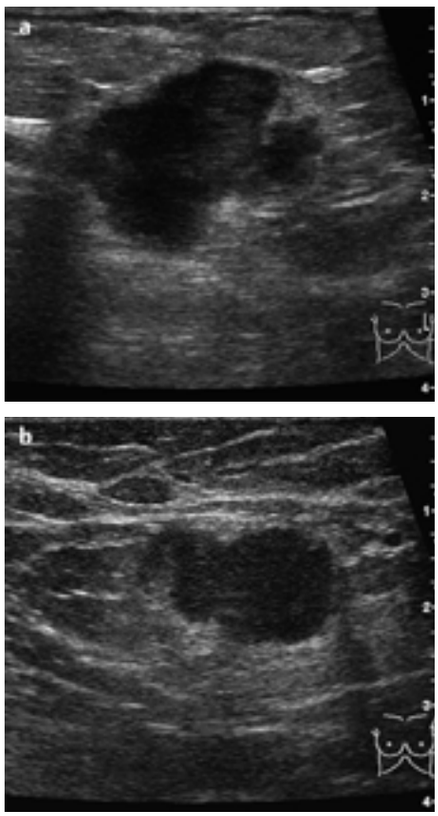
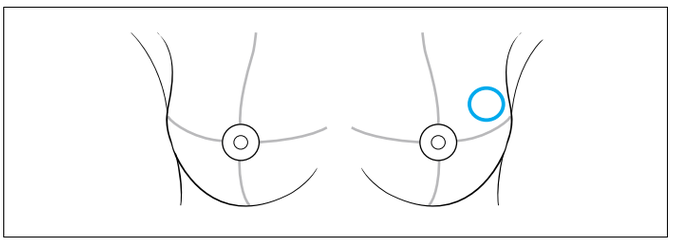


Fig. 27.**1 a, b** Ultrasound.



Clinical Findings

Palpable mass of 2 cm in the upper outer quadrant of the left breast.

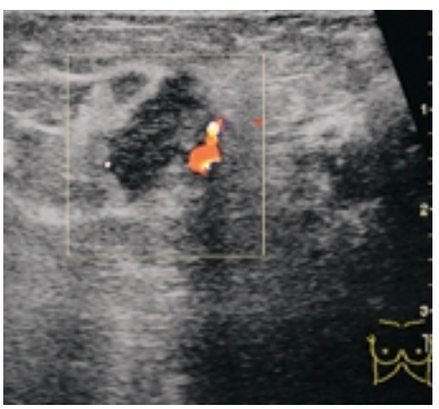


Fig. 27.**2** Color-coded duplex sonography.

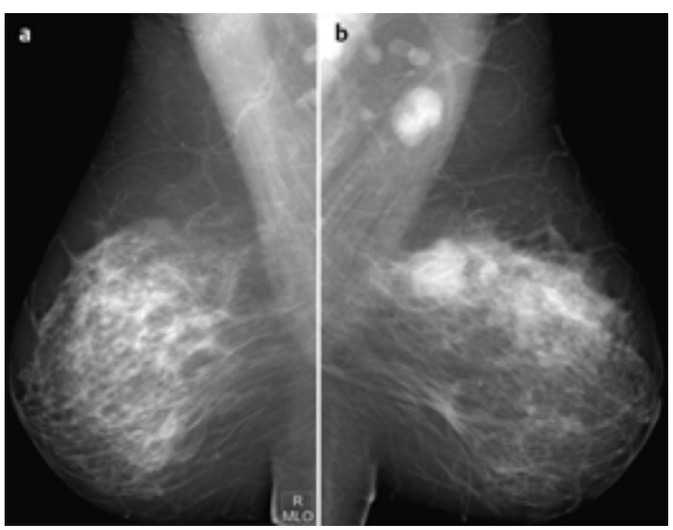


Fig. 27.**3 a, b** Digital mammography, MLO view.

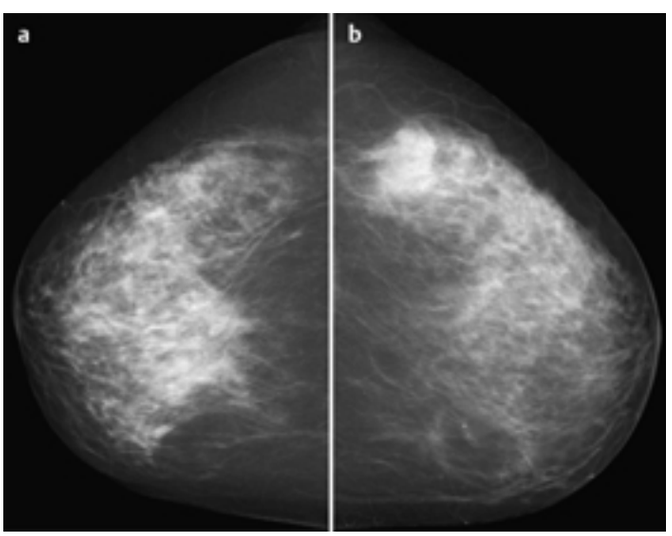
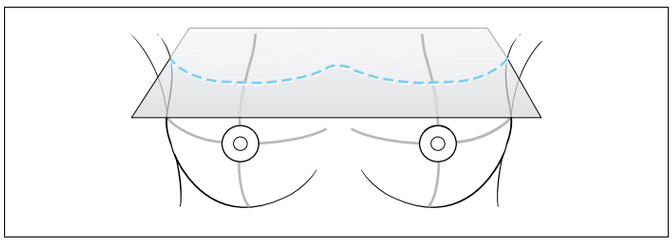
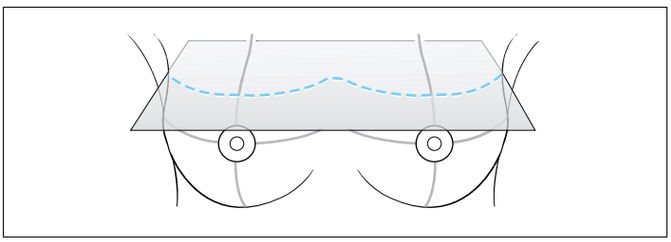


Fig. 27.**4 a, b** Digital mammography, CC view.

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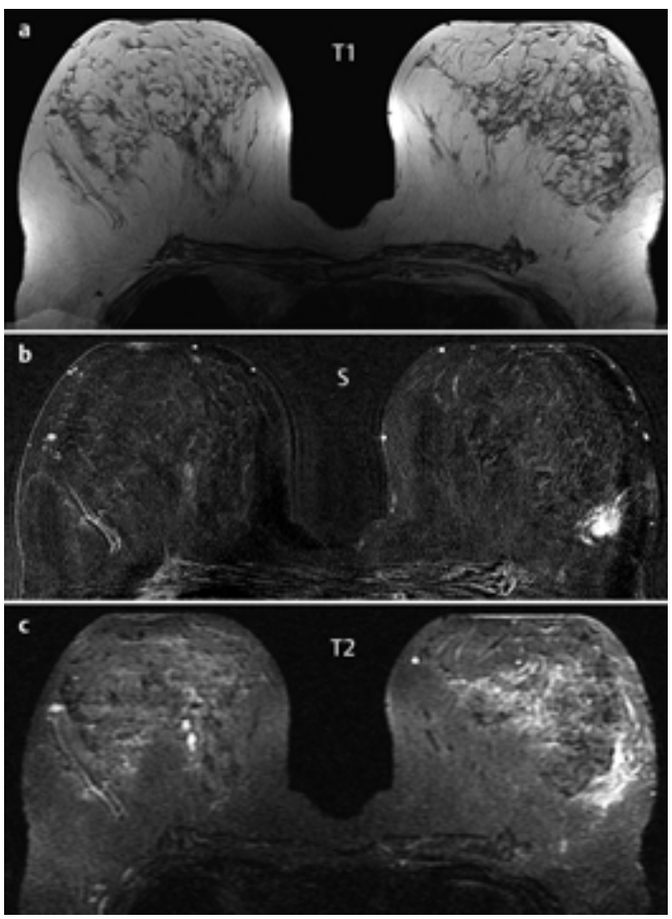


Fig. 27.**5 a – c** Contrast-enhanced MRI of the breasts.

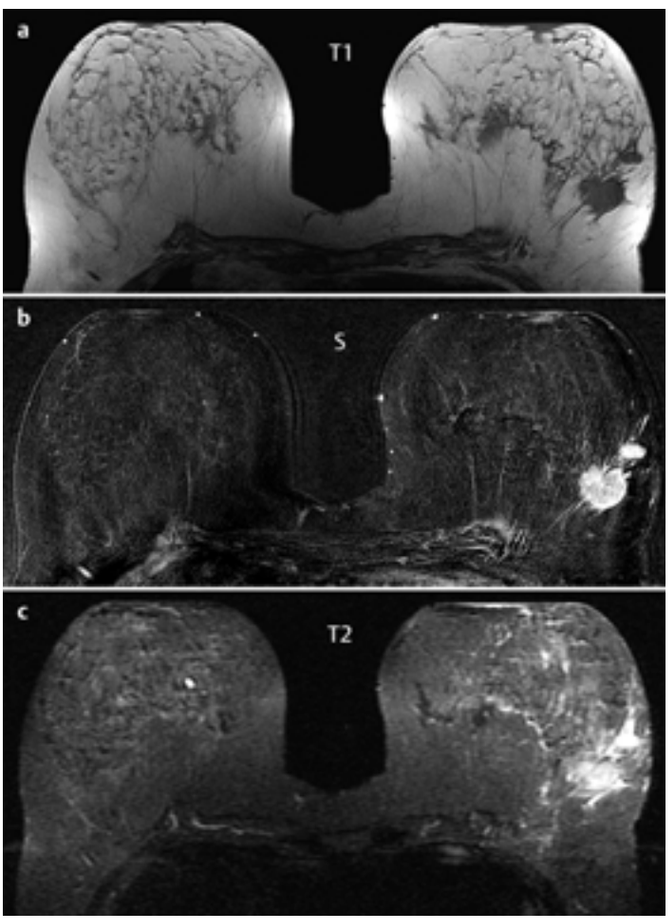


Fig. 27.**6 a – c** Contrast-enhanced MRI of the breasts.

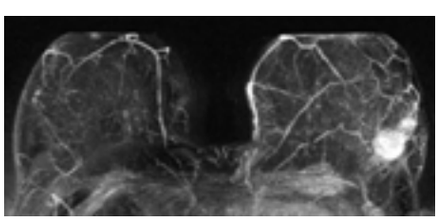


Fig. 27.**7** Contrast-enhanced MR mammography. Maximum intensity projection.

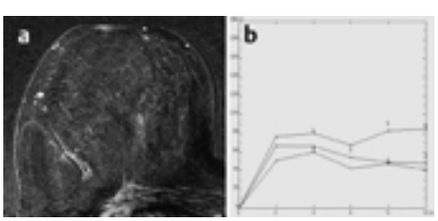


Fig. 27.**8 a, b** Signal-to-time curves, right breast.

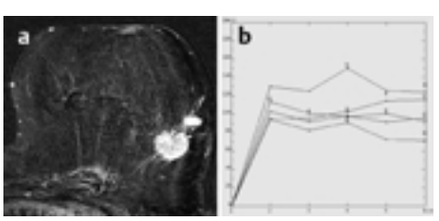


Fig. 27.**9 a, b** Signal-to-time curves, left breast.

?

Please characterize ultrasound, mammography, and MRI findings.
What is your preliminary diagnosis?
What are your next steps?

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This case shows the imaging studies of a patient with a palpable mass in the left breast.

Ultrasound

In the upper outer quadrant of the left breast, sonography detected a hypoechoic, lobulated, partially irregular lesion (diameter 23 mm) with an echoic border. This lesion showed indeterminate distal echo behavior and there was architectural distortion of the surrounding tissue. US BI-RADS left 5. In the right breast there were no suspicious sonographic findings in the upper outer quadrant or elsewhere (not shown).

Mammography

Imaging demonstrated bilaterally symmetric fibroglandular tissue, ACR type 2. There was a lobulated, isodense, partially ill-defined lesion (diameter 25 mm) in the upper outer quadrant of the left breast. This lesion showed a partial halo sign. Ventral to this lesion, mammograms showed another oval, well-defined, isodense lesion (diameter 10 mm). Pathological enlargement of the axillary lymph nodes. No pathological findings in the right breast. BI-RADS right 1/left 5. PGMI: CC and MLO views P.

MR Mammography

MRI showed a lobulated, partially ill-defined lesion (diameter 25 mm) in the upper outer quadrant of the left breast. This lesion had pathological contrast enhancement (initial signal increase of 180% and postinitial washout). Imaging depicted further lesions (diameters 10 mm and 5 mm) at distances of 10 mm and 35 mm respectively from the primary lesion. Between the outer quadrants of the right breast there was a round, well-defined lesion (diameter 5 mm) with homogeneous enhancement, initial signal increase of 70%, and postinitial washout as well as increased signal in T2 images.

MRI Artifact Category: 1
MRI Density Type: 1

MRM score	Finding right	Points	Finding left	Points
Shape	round	0	lobulated	1
Border	well-defined	0	ill-defined	1
CM Distribution	homogeneous	0	ring	2
Initial Signal Intensity Increase	moderate	1	strong	2
Post-initial Signal Intensity Character	wash-out	2	wash-out	2
MRI score (points)		**3**		**8**
MRI BI-RADS		**3**		**5**

➔ Differential Diagnosis

Right: Fibroadenoma, papilloma, carcinoma.
Left: Breast cancer with nodal metastases.

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BI-RADS Categorization		
Clinical Findings	right 1	left 5
Ultrasound	right 1	left 5
Mammography	right 1	left 5
MR Mammography	right 3	left 5
BI-RADS Total	**right 3**	**left 5**

Procedure

US-guided core biopsy of the mass in the outer part of the left breast.

Histopathology of the core biopsy specimen

Medullar carcinoma.

Further Procedure

Open biopsy of the lesion in the right breast following preoperative hook-wire localization.

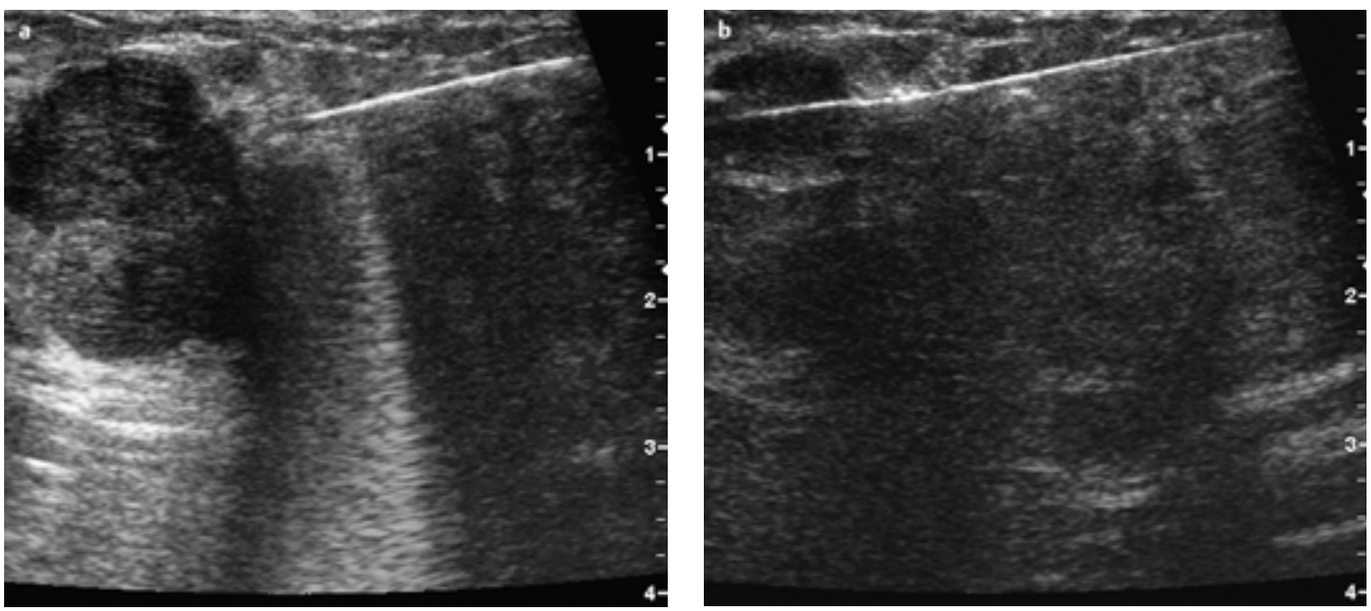


Fig. 27.**10 a, b** US-guided core biopsy (pre-fire (**a**) and post-fire (**b**) imaging).

Diagnoses

Right breast: Fibroadenoma.
Left breast: Multicentric invasive ductal carcinoma (primary tumor: 27 mm). Contrary to the core biopsy results, no medullary carcinoma.

Right:	Fibroadenoma.
Left:	IDC multicentric pT2, pN1, G2.

Treatment

Bilateral mastectomy at patient's request.

The halo sign is *not* a reliable indicator of benign histology.

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