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Suspicious Breast Microcalcifications: Diagnostic Approach Based on a Case Report

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Abstract | **Case Report**

Breast microcalcifications are a mammographic finding assessed according to their morphology, distribution, and associated abnormalities. We report the case of a 46-year-old woman presenting with two nodules in the upper outer quadrant of the left breast, associated with erythema, peau d'orange, and ipsilateral axillary lymphadenopathy. Mammography demonstrated pleomorphic microcalcifications in a segmental distribution, with an associated focal asymmetry, skin thickening, and nipple retraction. Ultrasound revealed an ill-defined heterogeneous hypoechoic area, irregular nodular lesions, and morphologically suspicious axillary lymph nodes. Histopathological examination established the diagnosis of invasive ductal carcinoma. This case illustrates the value of assessing calcifications together with associated parenchymal, skin, and lymph node abnormalities when planning the diagnostic workup.

Keywords: Breast Microcalcifications, Mammography, Breast Ultrasound, BI-RADS, Invasive Ductal Carcinoma, Percutaneous Biopsy.

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INTRODUCTION

When assessing breast microcalcifications, the main challenge is to distinguish benign appearances from findings that require histological assessment. Mammography plays a central role in this process. Evaluation of calcification morphology and distribution, together with a search for associated abnormalities, guides subsequent management [1].

The BI-RADS v2025 manual continues this standardization effort by combining a descriptive lexicon, a final assessment, and management recommendations [2].

We report the case of a 46-year-old woman in whom segmentally distributed microcalcifications were associated with parenchymal, skin, nipple, and lymph node abnormalities. The final diagnosis was invasive ductal carcinoma. This observation provides an opportunity to discuss the imaging features that guide radiological interpretation and biopsy selection.

CASE REPORT

A 46-year-old nulliparous, premenopausal woman with no significant reported medical history presented with two left breast nodules. Clinical examination revealed two nodules in the upper outer quadrant, each approximately 1 cm in diameter and mobile relative to the superficial and deep planes. Associated findings included erythema, peau d'orange, and a palpable left axillary lymph node measuring approximately 1 cm. Examination of the right breast was unremarkable.

Bilateral mammography, including craniocaudal and mediolateral oblique views, showed breast composition category b. In the left upper outer quadrant, a focus of dense pleomorphic microcalcifications showed a segmental distribution. A low-density, approximately oval focal asymmetry containing microcalcifications was also described in this quadrant. An oval, circumscribed nodular opacity containing calcifications projected over the axillary tail, suggesting a calcified lymph node. Skin thickening of up to 7.6 mm was associated with nipple retraction. No architectural distortion was reported. No suspicious mammographic abnormality was described in the right breast (figure 1).

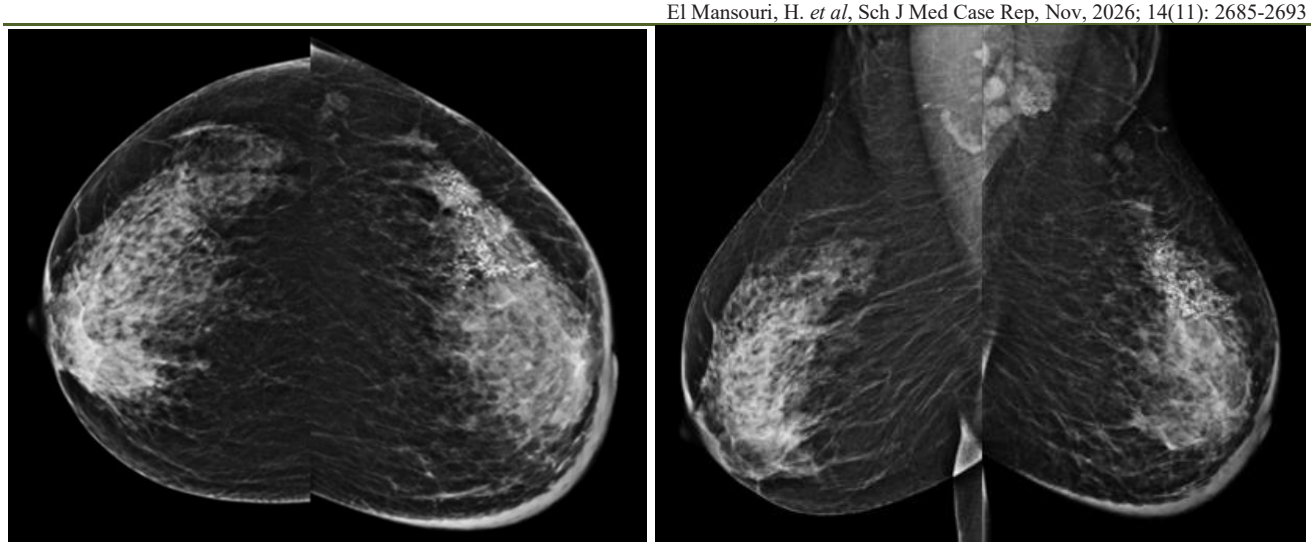


Figure 1: Left breast mammography, craniocaudal and mediolateral oblique views: pleomorphic microcalcifications in a segmental distribution in the upper outer quadrant, associated with focal asymmetry, skin thickening, and nipple retraction. Panel labels and annotations should be adapted to the selected images

Ultrasound of the left upper outer quadrant demonstrated an ill-defined heterogeneous hypoechoic area at the 2 o'clock position, 7 cm from the nipple. It contained calcifications and showed posterior acoustic shadowing, measuring approximately 24.7 × 18.3 × 31 mm (figure 2). Two additional lesions at the 2 o'clock position, 8 cm from the nipple, were described as approximately oval, with irregular margins and heterogeneous hypoechoic echotexture. Both contained calcifications and were surrounded by a hyperechoic halo, with focal posterior acoustic shadowing. They measured 13 × 11 mm and 10 × 9.5 mm, respectively. No internal vascularity was detected in either lesion on color Doppler imaging (figure 3).

Axillary ultrasound demonstrated a conglomerate of enlarged left axillary lymph nodes with cortical thickening, effacement of the fatty hilum, and calcifications. The largest measured 21 × 12 mm (figure 4).

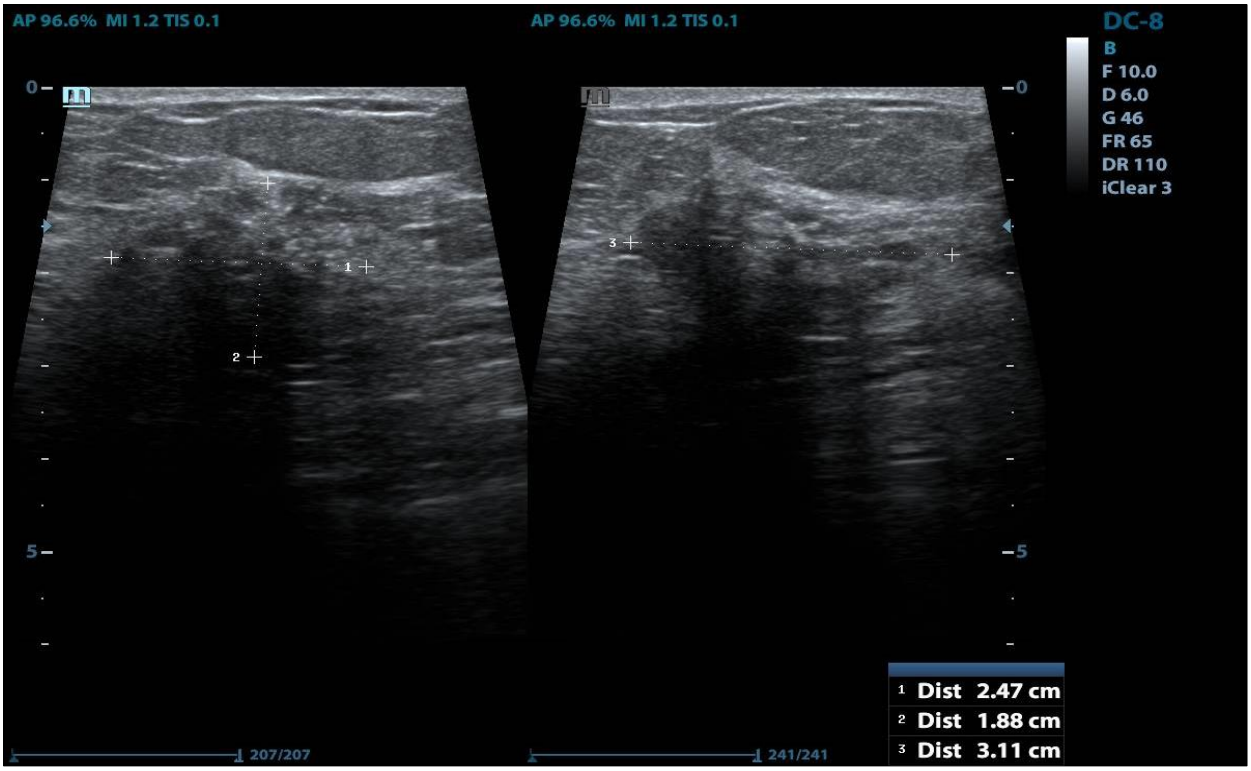


Figure 2: Ultrasound of the left upper outer quadrant: an ill-defined heterogeneous hypoechoic area containing calcifications and showing posterior acoustic shadowing, measuring approximately 24.7 × 18.3 × 31 mm



Figure 3: Left breast ultrasound: heterogeneous hypoechoic nodular lesions with irregular margins, internal calcifications, and a surrounding hyperechoic halo

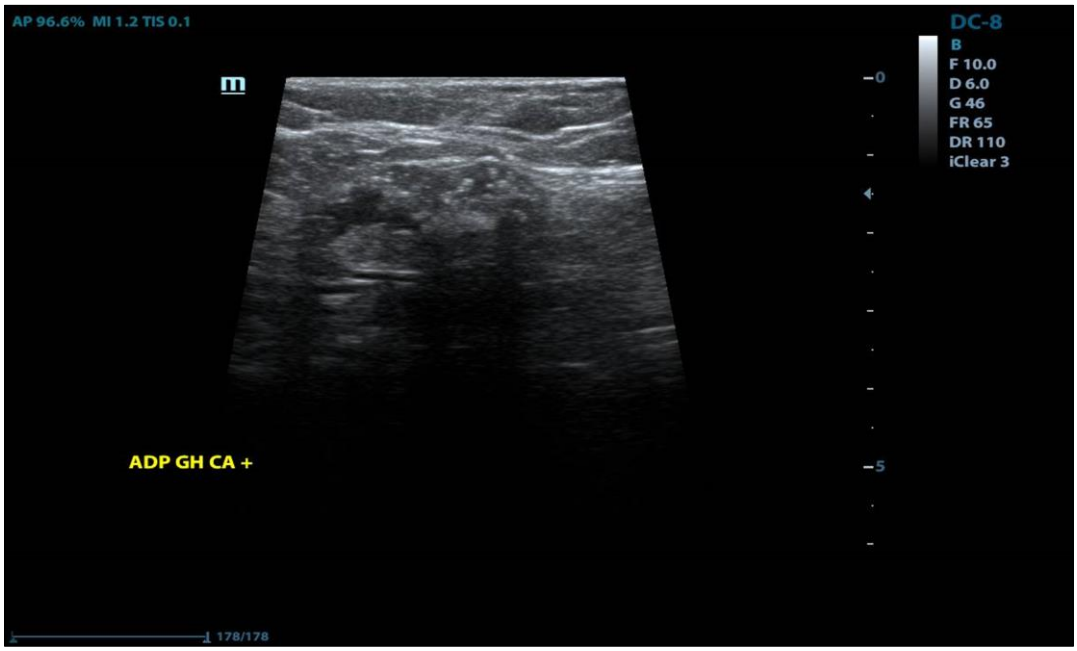


Figure 4: Left axillary ultrasound: enlarged lymph nodes with cortical thickening, effacement of the fatty hilum, and calcifications. The largest measures 21 × 12 mm

The patient underwent a diagnostic breast biopsy. Histopathological analysis of the biopsy specimens revealed invasive ductal carcinoma.

DISCUSSION

Imaging Assessment of the Calcifications

Breast microcalcifications should be interpreted as part of a complete imaging assessment. Morphology provides an initial estimate of suspicion, while distribution, associated findings, and comparison with prior examinations help determine the appropriate diagnostic pathway. The BI-RADS framework provides a common language for describing these features and linking the final assessment to a management recommendation [1, 2]. In the present case, the relevance of the calcifications lies in their association with abnormalities on mammography, breast ultrasound, and axillary ultrasound, as illustrated in Figures 1–4. Characteristic benign examples and the accompanying

terminology table are provided in Figure 5 and Table 1, with distribution examples in Figure 6.

Morphologically suspicious calcifications include amorphous, coarse heterogeneous, fine pleomorphic, and fine linear or fine linear branching forms. These descriptors are not interchangeable. The term "pleomorphic" describes variation in shape and size, whereas linear and branching forms suggest calcification within ductal structures. In a meta-analysis of 10,665 lesions, Rominger *et al*., demonstrated differences in malignancy rates between morphological categories and identified patient selection and associated suspicious findings as sources of heterogeneity [3]. Morphology therefore supports risk stratification without establishing the histological diagnosis.

Distribution adds a spatial dimension to this assessment. A segmental pattern suggests involvement of a ductal system and its branches. In our patient, the mammographic focus was described as pleomorphic and segmentally distributed in the left upper outer quadrant (Figure 1). This combination supported histological investigation. However, neither the presence nor the extent of an associated ductal carcinoma in situ component can be established from calcification distribution alone. Likewise, the calcified extent should not be equated with the size of the invasive component.

Hegde *et al*., provide a recent illustration of the importance of associated findings. In their study of 77 lesions, published online in 2025 and included in a 2026 issue, the positive predictive value for malignancy was 71.4% when suspicious microcalcifications were associated with a mammographic mass, compared with 37.5% without a mass. The positive predictive value for a segmental distribution was 63.2% [4]. These estimates came from a small, selected hospital cohort. They support an integrated interpretation but cannot be transferred directly to an individual patient or used to treat a focal asymmetry as equivalent to a mammographic mass.

Mammographic Findings and Correlation with the Provided Images

The paired craniocaudal and mediolateral oblique views in Figure 1 place the calcifications within the broader pattern of breast asymmetry and associated changes. In the case description, the left-sided findings include a focal asymmetry, skin thickening, nipple retraction, and a calcified nodular opacity in the axillary tail. These should be recorded separately so that the report distinguishes the calcification focus from the associated parenchymal, cutaneous, and nodal abnormalities. The absence of reported architectural distortion does not negate the other suspicious findings.

The supplied mammograms are overview images rather than dedicated magnification views. They are useful for illustrating the distribution and associated abnormalities, but a definitive description of individual calcification morphology and a precise measurement of the involved area require review of the original diagnostic images. Magnification views help characterize the calcifications and define their extent; a true lateral view may also help identify layering calcifications [1]. Such additional views should not be described as having been obtained in this patient unless their acquisition is documented.

For this case, radiological reporting should specify the location and extent of the calcifications separately from the dimensions of the sonographic lesions. This distinction matters because the mammographic and sonographic abnormalities do not necessarily represent identical disease boundaries. The initial BI-RADS category should be retrieved from the original diagnostic report rather than assigned retrospectively from the manuscript figures. A category indicating biopsy-proven malignancy describes the post-biopsy status and should not replace documentation of the initial assessment [2].

Sonographic Correlation and Lesion Characterization

Ultrasound complements mammography by assessing the tissue associated with a calcification focus and identifying potential biopsy targets. Its role is particularly relevant when a palpable abnormality or focal asymmetry accompanies the calcifications. Conversely, a negative ultrasound examination does not exclude malignancy in a suspicious mammographic focus [1]. Correlation should therefore be based on location and imaging characteristics, rather than on the presence or absence of a sonographic mass alone.

Figure 2 illustrates the ill-defined heterogeneous hypoechoic area described at the 2 o'clock position, 7 cm from the nipple. Posterior acoustic shadowing is conspicuous on the supplied image. Together with the indistinct appearance and the mammographic calcifications, this finding supports concern for an underlying pathological process. Shadowing alone is not histologically specific, and neither tumor grade nor molecular subtype can be inferred from this image. The interpretation rests on the combined clinical, mammographic, and sonographic findings.

Figure 3 illustrates two additional hypoechoic nodular lesions at the 2 o'clock position, 8 cm from the nipple. Their approximately oval overall shape should be considered alongside the reported irregular margins, heterogeneous echotexture, hyperechoic halo, and focal shadowing. An oval configuration should not override these associated findings. No internal Doppler signal was reported, but a static grayscale illustration cannot independently establish vascularity; the Doppler finding should remain attributed to the original examination.

The proximity of the abnormalities in Figures 2 and 3 makes accurate lesion mapping important. Their relationship should be documented by clock-face position, distance from the nipple, depth, and intervening tissue. The available images do not establish whether they are separate tumor foci, components of a continuous process, or lesions with different histological findings. Consequently, multifocal disease should not be asserted solely because more than one sonographic abnormality was described.

Axillary and Cutaneous Findings

Figure 4 illustrates the abnormal left axillary finding described in the case report, with a heterogeneous appearance, echogenic foci, and posterior shadowing. Cortical thickening and loss of the fatty hilum are reported in the original description. Their assessment is more reliable on a complete ultrasound examination than on a single selected frame, particularly when calcification-related shadowing obscures internal architecture.

Axillary ultrasound assessment depends on morphology as well as size. In a prospective study of 105 patients with clinically negative axillae, Stachs *et al*., found cortical thickness greater than 3 mm to be an independent predictor of nodal metastasis; absence of the fatty hilum and other morphological abnormalities also contributed to the assessment [10]. That study population differs from our patient, who had palpable adenopathy. The findings nevertheless support describing the cortex, hilum, shape, and number of suspicious nodes rather than relying on the largest nodal diameter alone.

In our case, the ipsilateral breast malignancy and abnormal axillary appearance raise concern for nodal involvement. However, calcifications and suspicious morphology are not equivalent to histologically confirmed metastasis. Image-guided sampling of an appropriate node may be considered as part of the staging pathway, according to the multidisciplinary plan [5]. No positive nodal biopsy or pathological nodal stage should be reported without supporting documentation.

The skin thickening, erythema, peau d'orange, and nipple retraction also require clinical correlation. The international expert consensus on inflammatory breast cancer specifies a rapid clinical onset, a history of no more than 6 months, erythema involving at least one-third of the breast, and pathological confirmation of invasive carcinoma [11]. Imaging helps evaluate the underlying abnormalities but does not independently establish that clinical diagnosis. Because the duration and extent of the skin changes are not documented here, the appropriate description remains invasive ductal carcinoma associated with inflammatory skin changes, without formally assigning an inflammatory subtype.

Biopsy Selection and Radiological Pathological Concordance

The optimal biopsy target is the abnormality that can be sampled reliably and that addresses the diagnostic question. A clearly visible sonographic lesion may undergo ultrasound-guided core needle biopsy, whereas calcifications visible only on mammography require mammographic targeting, using stereotactic or tomosynthesis guidance. Vacuum-assisted biopsy is particularly suitable for calcification sampling. When calcifications are the intended target, specimen radiography documents their retrieval and helps assess sampling adequacy [5].

This distinction is relevant to the present case because a biopsy diagnosing invasive ductal carcinoma in one sonographic lesion does not automatically establish the nature of every additional lesion or the full calcified territory. The pathology request and procedural report should identify which target was sampled. If a separate abnormality would change treatment planning, its relationship to the known malignancy should be resolved by appropriate imaging correlation and, when indicated, additional sampling [5]. These are considerations for diagnostic completion, not procedures documented as having been performed in this patient.

Recent studies refine the technical options. Mema *et al*., compared 1,756 biopsies of suspicious calcifications and found that tomosynthesis guidance was associated with slightly shorter procedures, fewer exposures, and lower radiation doses than digital mammographic guidance, without a significant difference in malignancy rates [6]. In October 2026, Paranjape *et al*., reported microcalcification retrieval in 790 of 803 mammography-guided vacuum-assisted procedures, approximately 98.4%, with high retrieval rates across breast-density subgroups [7]. Retrieval performance should not be confused with diagnostic sensitivity or proof of complete lesion removal.

Histological examination confirmed invasive ductal carcinoma in our patient. A complete concordance assessment should determine whether this diagnosis explains the sampled imaging abnormality and whether any additional suspicious target remains unresolved. The biopsy method, precise target, histological grade, receptor status, and any associated in situ component should be obtained from the source reports rather than inferred from the images. In particular, the morphology of the calcifications does not establish a high-grade tumor, HER2 positivity, or a triple-negative phenotype.

Histological Underestimation and Implications for Management

Radiological disappearance of a calcification focus after vacuum-assisted biopsy does not by itself exclude residual disease or histological underestimation. In a retrospective series of 165 B3 lesions presenting as microcalcifications, Irmici *et al*., reported upgrade rates

of 4.0% after complete calcification removal and 15.2% after partial removal [8]. These results concern lesions of uncertain malignant potential and should not be interpreted as evidence that removing calcifications is sufficient treatment for invasive carcinoma.

Rella *et al*., similarly evaluated vacuum-assisted excision with peripheral cavity sampling in 72 patients with small calcification clusters [9]. This strategy may be relevant to carefully selected lesions, but it should not be extrapolated to the treatment of the confirmed invasive ductal carcinoma described here. For the present observation, the principal lesson is the diagnostic sequence demonstrated by the iconography: mammography identifies the calcification pattern (Figure 1), ultrasound characterizes associated breast lesions (Figures 2 and 3), and axillary ultrasound documents suspicious regional findings (Figure 4). Biopsy then establishes the nature of the sampled lesion, while multidisciplinary assessment determines the remaining staging and treatment requirements.

Typically Benign Calcification Patterns

Typically benign patterns are summarized in Table 1 and illustrated in Figure 5. The images are educational examples rather than additional findings in this patient [2-17]. The serpiginous example in panel H is descriptive and is not a separate BI-RADS v2025 lexicon category.

Table 1: Typically benign calcification morphologies in BI-RADS v2025

BI-RADS v2025 pattern	Recognition on mammography
Skin	Dermal location; often central lucency.
Vascular	Parallel tracks following vessels.
Coarse	Large confluent deposits; includes involuting fibroadenoma and dystrophic changes.
Large rod-like	Smooth thick ductal rods in duct ectasia.
Round	Smooth rounded deposits; assess distribution and evolution.
Rim	Thin calcified wall around a rounded structure.
Layering	Dependent sediment, best demonstrated on a true lateral view.
Suture	Linear deposits outlining surgical material.

Terminology updated from the ACR v2025 mammography lexicon [2-17]. Coarse incorporates the former popcorn-like and dystrophic descriptors; round replaces punctate; layering replaces milk of calcium. A characteristic benign appearance supports BI-RADS 2 after complete assessment. Figure 5 retains the original teaching images and labels.

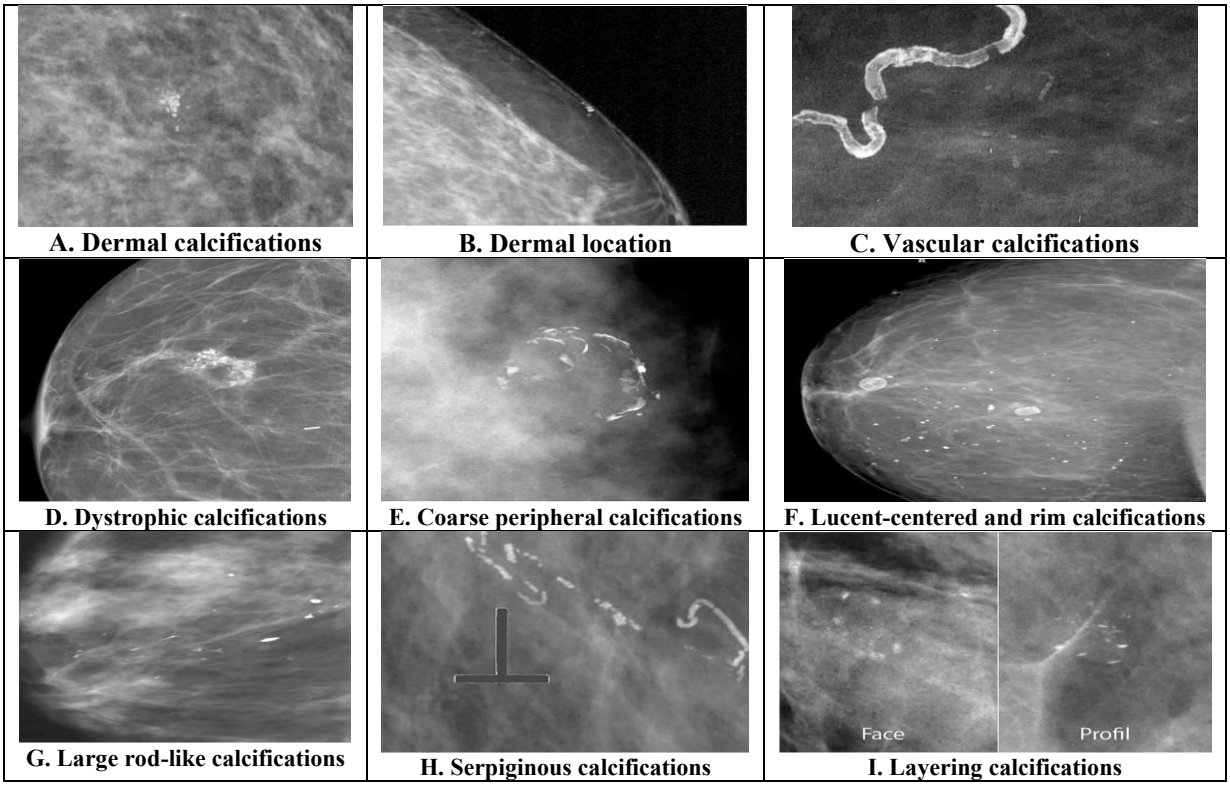


Figure 5: Mammographic examples of typically benign calcification patterns

A–B, superficial dermal examples; C, arterial wall calcifications; D, dystrophic changes; E, coarse calcifications at the periphery of a circumscribed mass; F, rim and lucent-centered patterns; G, smooth thick ductal calcifications; H, a ribbon-like serpiginous pattern; I, projection-dependent intracystic layering. The original image labels in panel I read Face (craniocaudal) and Profil (lateral).

Image source: supplied teaching presentation, slide 60. Individual original publication sources are not specified on that slide. Reference [2], supports the terminology, not the provenance of these images.

Distribution Patterns and Diagnostic Pitfalls

Distribution is assessed together with morphology, interval change, and associated findings (Figure 6 and Table 2). A distribution alone does not determine a BI-RADS category. Amorphous and coarse heterogeneous calcifications remain suspicious morphologies in the v2025 lexicon [2-17].

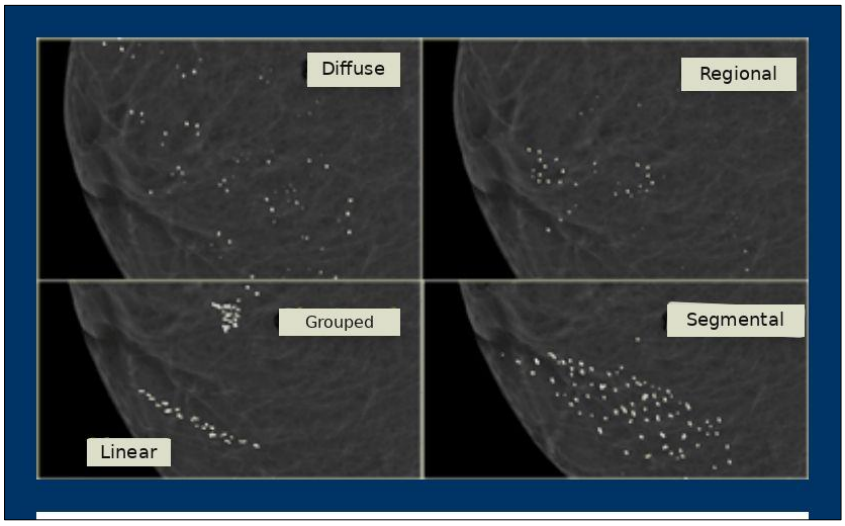


Figure 6: Mammographic examples of calcification distribution reproduced from slide 62 of the supplied presentation. Diffus: diffuse; Régional: regional; Regroupé: grouped; Linéaire: linear; Segmentaire: segmental. The image source is the supplied presentation; the original publication is not identified. Terminology is supported by [2]

Table 2: Integrated assessment of calcifications using BI-RADS v2025 descriptors

Assessment axis	Descriptors or interpretation
Suspicious morphology	Amorphous; coarse heterogeneous; fine pleomorphic; fine linear or fine linear branching.
Diffuse / regional	Widespread random / broad nonductal distribution; interpret with morphology.
Grouped	Localized cluster; benignity or suspicion depends on its features.
Linear / segmental	Aligned deposits / ductal territory; may increase suspicion.
Final assessment	Integrate morphology, distribution, comparison, and associated findings; biopsy suspicious abnormalities.

Table 3: BI-RADS assessment categories and management [2-17]

Category	Cancer likelihood	Management
0 — Incomplete	Not applicable	Additional imaging or prior comparison.
1 — Negative	Essentially 0%	Routine screening.
2 — Benign	Essentially 0%	Routine screening.
3 — Probably benign	>0% to ≤2%	Short interval follow-up, initially 6 months.
4A — Low suspicion	>2% to ≤10%	Tissue diagnosis.
4B — Moderate suspicion	>10% to ≤50%	Tissue diagnosis.
4C — High suspicion	>50% to <95%*	Tissue diagnosis.
5 — Highly suggestive	≥95%	Tissue diagnosis.
6 — Biopsy-proven malignancy	Not applicable	Oncological and surgical management.

*The public ACR v2025 summary prints "50% to <95%" for 4C, while 4B includes 50%; >50% is used here to avoid overlap. Category 3 requires a complete diagnostic workup and is not a default category for suspicious calcifications. Tables 1–3 are editorial summaries, not official ACR forms. Sources: ACR v2025 [2-17], and The Radiology Assistant [16].

The supplied educational flowchart is reproduced in Figure 7 as a simplified visual aid; the terminology and management summarized in Tables 1–3 remain the reference for this discussion.

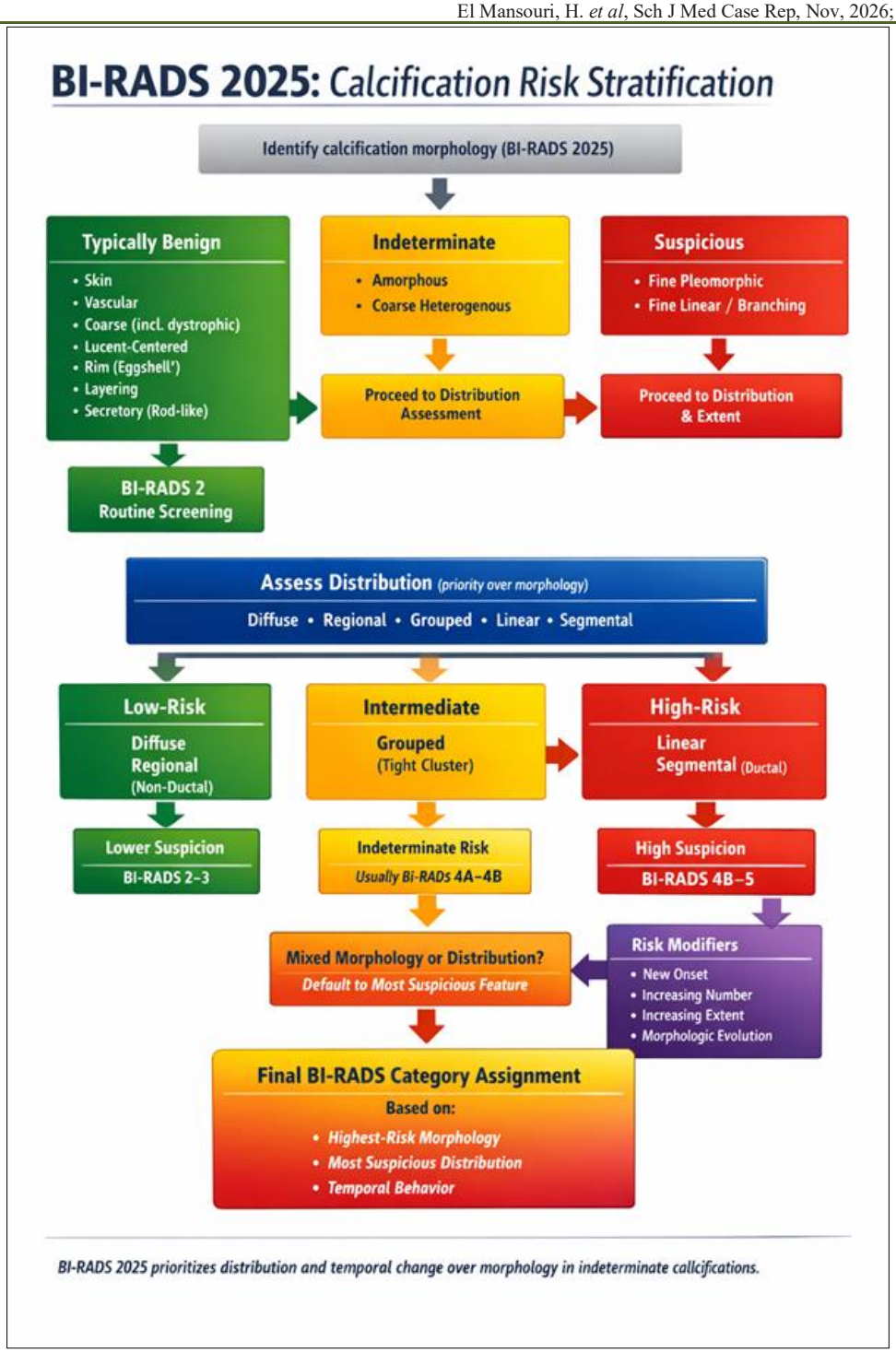


Figure 7: Supplied educational flowchart for calcification risk assessment.
Source: image provided by the author; original publication and official ACR endorsement are not documented.

This is not an official ACR algorithm. Amorphous and coarse heterogeneous calcifications belong to the suspicious morphology lexicon. Distribution alone does not assign a BI-RADS category, and a general priority of distribution over morphology is not established by the ACR v2025 lexicon. Final assessment integrates morphology, distribution, temporal change, and associated findings [2-17].

Additional references from the PowerPoint bibliography have been retained: the comparison of electronic zoom and geometric magnification [12], prospective follow-up of probably benign lesions [13], the historical fifth-edition BI-RADS atlas [14], and mammographic assessment of local recurrence after breast-conserving therapy for ductal carcinoma in situ [15]. These are bibliographic sources listed in the presentation, not verified image-by-image attributions.

CONCLUSION

Assessment of breast microcalcifications requires consideration of their morphology, distribution, and surrounding abnormalities. In this case of invasive ductal carcinoma, the segmental calcifications were part of a broader pattern involving parenchymal lesions, skin and nipple changes, and suspicious axillary lymph nodes. Correlation between mammography and ultrasound guides biopsy selection, while radiological–pathological correlation establishes whether sampling adequately explains the imaging findings.

REFERENCES

1. Chamming's F, Chopier J, Mathelin C, Chéreau E. Exploration des microcalcifications mammaires : recommandations. J Gynecol Obstet Biol Reprod (Paris). 2015;44(10):960–969. doi: 10.1016/j.jgyn.2015.09.038.
2. Newell MS, Destounis SV, Leung JWT, DeMartini WB, Lee CH, Eby PR. ACR BI-RADS v2025 Manual. Reston, VA: American College of Radiology; 2025. https://www.acr.org/Clinical-Resources/Clinical-Tools-and-Reference/Reporting-and-Data-Systems/BI-RADS.
3. Rominger M, Wisgickl C, Timmesfeld N. Breast microcalcifications as type descriptors to stratify risk of malignancy: a systematic review and meta-analysis of 10665 cases with special focus on round/punctate microcalcifications. Rofo. 2012;184(12):1144–1152. doi: 10.1055/s-0032-1313102.
4. Hegde SS, Ananthasivan R, Ramachandra SP. Malignancy Risk Stratification of Suspicious Breast Microcalcifications Detected on Mammograms Using Morphological and Distribution Characteristics Based on the Fifth Edition of BI-RADS. Indian J Radiol Imaging. 2026;36(1):92–99. Published online May 27, 2025. doi: 10.1055/s-0045-1809161.
5. Bick U, Trimboli RM, Athanasiou A, et al. Image-guided breast biopsy and localisation: recommendations for information to women and referring physicians by the European Society of Breast Imaging. Insights Imaging. 2020;11(1):12. doi: 10.1186/s13244-019-0803-x.
6. Mema E, Alija O, Lee A, et al. Digital mammography-guided versus digital breast tomosynthesis-guided biopsy: A comparative study of sampling suspicious breast calcifications. Eur J Radiol. 2026;198:112721. doi: 10.1016/j.ejrad.2026.112721.
7. Paranjape N, Wong FYS, Burns RA, Jain T. Impact of Breast Density and Other Factors on Mammography Guided Vacuum Assisted Breast Biopsy Microcalcification Retrieval Rates. J Med Imaging Radiat Oncol. Published online October 7, 2026. doi: 10.1111/1754-9485.70201.
8. Irmici G, Depretto C, Pinto A, et al. Influence of Complete Lesion Removal During Vacuum-Assisted Breast Biopsy on the Upgrade Rate of B3 Lesions Presenting as Microcalcifications. J Clin Med. 2025;14(5):1513. doi: 10.3390/jcm14051513.
9. Rella R, Romanucci G, Belli P, et al. Improved evaluation of patients with small clusters of microcalcifications on mammograms: Implementation of vacuum assisted excision with "cavity margins shaving" technique. Eur J Radiol. 2025;188:112138. doi: 10.1016/j.ejrad.2025.112138.
10. Stachs A, Tra-Ha Thi A, Dieterich M, et al. Assessment of Ultrasound Features Predicting Axillary Nodal Metastasis in Breast Cancer: The Impact of Cortical Thickness. Ultrasound Int Open. 2015;1(1):E19–E24. doi: 10.1055/s-0035-1555872.
11. Dawood S, Merajver SD, Viens P, et al. International expert panel on inflammatory breast cancer: consensus statement for standardized diagnosis and treatment. Ann Oncol. 2011;22(3):515–523. doi: 10.1093/annonc/mdq345.
12. Moraux-Wallyn M, Chaveron C, Bachelle F, Taieb S, Ceugnart L. Comparaison entre le zoom numérique et l'agrandissement géométrique dans l'étude des foyers de microcalcifications en mammographie numérique. J Radiol. 2010;91(9 Pt 1):879–883. doi: 10.1016/S0221-0363(10)70129-3.
13. Sickles EA. Periodic mammographic follow-up of probably benign lesions: results in 3,184 consecutive cases. Radiology. 1991;179(2):463–468. doi: 10.1148/radiology.179.2.2014293.
14. D'Orsi CJ, Sickles EA, Mendelson EB, Morris EA, et al. ACR BI-RADS Atlas, Breast Imaging Reporting and Data System. 5th ed. Reston, VA: American College of Radiology; 2013.
15. Liberman L, Van Zee KJ, Dershaw DD, Morris EA, Abramson AF, Samli B. Mammographic features of local recurrence in women who have undergone breast-conserving therapy for ductal carcinoma in situ. AJR Am J Roentgenol. 1997;168(2):489–493. doi: 10.2214/ajr.168.2.9016233.
16. The Radiology Assistant. BI-RADS v2025 Manual — Mammography. Calcifications. https://radiologyassistant.nl/breast/bi-rads/bi-rads-for-mammography-and-ultrasound-2013-1-1#calcifications. Accessed November 7, 2026.
17. American College of Radiology. BI-RADS v2025 Mammography Lexicon Summary Form. Appendix B, pp. 173–176. https://edge.sitecorecloud.io/americancoldf5f-acrorgf92a-productioncb02-3650/media/ACR/Files/RADS/BI-RADS/BI-RADS-Summary-Form-Mammography.pdf. Accessed November 7, 2026.