A Double Oncologic Diagnosis Synchronous Invasive Breast Carcinoma and Giant Gastric GIST

À propos d'un cas / A case report.

Abstract

Background: Gastrointestinal stromal tumors (GISTs) may coexist with other primary malignancies, but synchronous invasive breast carcinoma and gastric GIST remain rarely reported. Case presentation: A 71-year-old postmenopausal woman presented with a palpable left-breast nodule. Mammography and ultrasonography showed a 15 × 10 mm irregular spiculated ACR 5 lesion. Core-needle biopsy demonstrated grade 2 invasive breast carcinoma. Staging thoracoabdominopelvic CT unexpectedly revealed a 107 × 108 mm heterogeneous fundic gastric mass with central necrosis and fistulization into the gastric lumen. Endoscopy showed an ulceroproliferative fundic process. Gastric biopsy disclosed a spindle-cell neoplasm with strong diffuse CD117 expression; DOG1, AE1/AE3, CD45, desmin, and smooth-muscle actin were negative. The findings supported two synchronous primary tumors rather than metastatic breast cancer. The patient was reviewed by a multidisciplinary team and received systemic treatment described in the records as chemotherapy, which remained ongoing at the latest follow-up. Discussion: The case highlights the need to obtain separate tissue diagnoses for atypical staging findings, to interpret DOG1 negativity in the full morphologic and immunohistochemical context, and to prioritize treatment according to the immediate risk, resectability, biomarkers, and expected treatment sensitivity of each malignancy. Conclusion: A new lesion identified during cancer staging should not automatically be considered metastatic; independent histologic confirmation can fundamentally change staging and management.

Keywords: breast cancer; invasive ductal carcinoma; gastrointestinal stromal tumor; gastric GIST; synchronous malignancies; case report

Introduction

Gastrointestinal stromal tumors are the most common mesenchymal neoplasms of the gastrointestinal tract, although their population incidence is low. The stomach is the predominant primary site. Diagnosis integrates morphology, immunohistochemistry, and molecular profiling, while prognosis is influenced by tumor size, mitotic rate, anatomic site, and tumor rupture [2–7].

Additional primary malignancies have been described before, concurrently with, or after a GIST diagnosis. Population-based and clinicopathologic series suggest that this association is not merely anecdotal, although the biological explanation remains uncertain [8–10]. Synchronous breast carcinoma and gastric GIST are particularly uncommon and are mainly represented by isolated reports [11]. We report a histologically documented synchronous invasive breast carcinoma and giant gastric GIST, following the CARE reporting framework [1].

Case presentation

Clinical findings

A 71-year-old woman, gravida 7 para 7, who had been menopausal for approximately 20 years, presented after self-palpating a left-breast lump. Her principal surgical history was a remote cholecystectomy. Her body mass index was 28.1 kg/m², and she was hemodynamically stable. No acute deterioration, overt gastrointestinal bleeding, or obstructive digestive symptoms were documented as the presenting complaint. Breast examination identified a hard, painless, mobile nodule measuring approximately 1.5 cm at the junction of the upper quadrants of the left breast. There was no nipple discharge, nipple or skin retraction, inflammatory change, or clinically palpable axillary lymphadenopathy. Examination of the contralateral breast was unremarkable.

Breast assessment

On 14 May 2024, mammography and targeted ultrasonography demonstrated a 15 × 10 mm dense hypoechoic lesion in the left breast with an irregular spiculated, non-circumscribed appearance, classified as ACR 5. This category indicates a very high suspicion of malignancy and requires tissue diagnosis. The available report did not describe suspicious microcalcifications, a separate architectural distortion, or axillary lymphadenopathy. No suspicious lesion was identified in the contralateral breast. Fully anonymized mammographic and ultrasonographic images are presented in Figures 1 and 2.

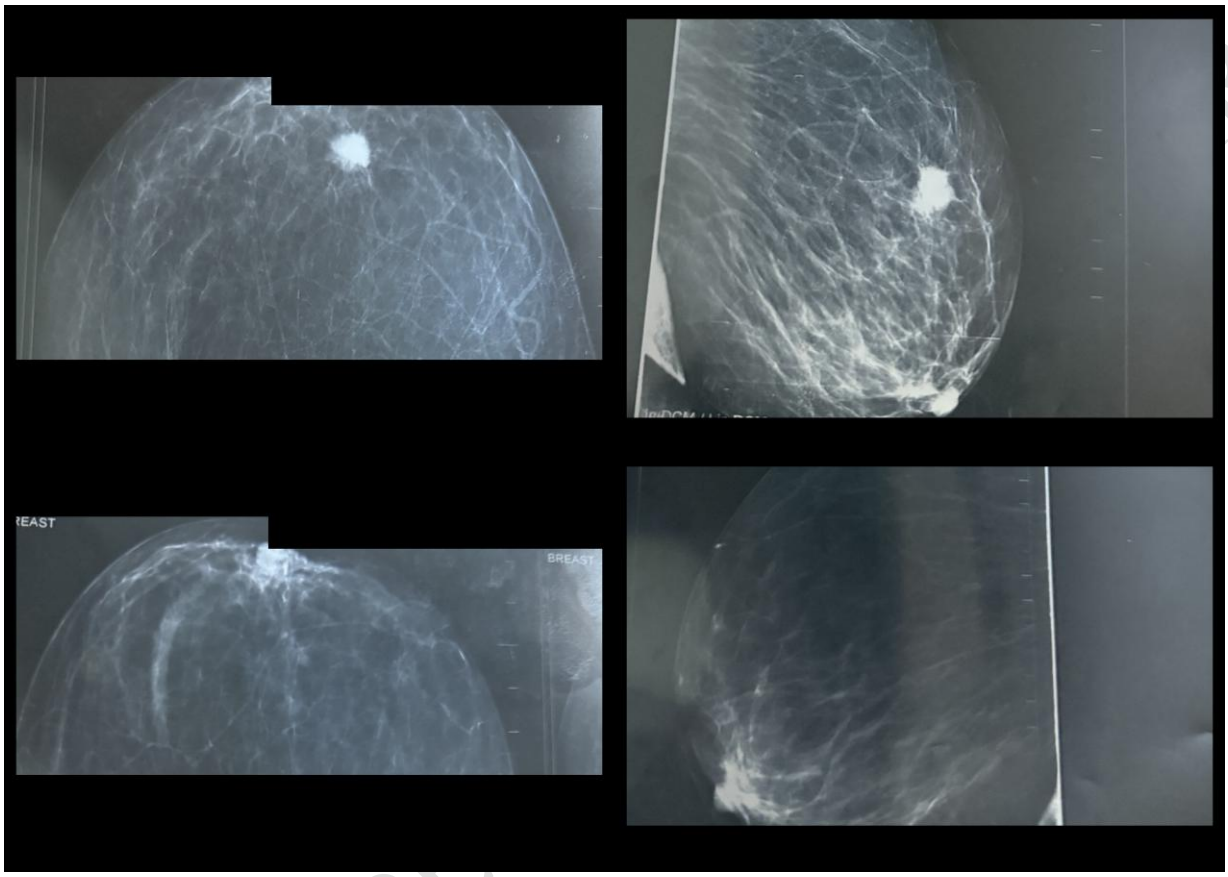

Figure 1. Bilateral mammography. A: left-breast views showing an irregular spiculated opacity. B: right-breast views, with no evident suspicious lesion on the provided images.

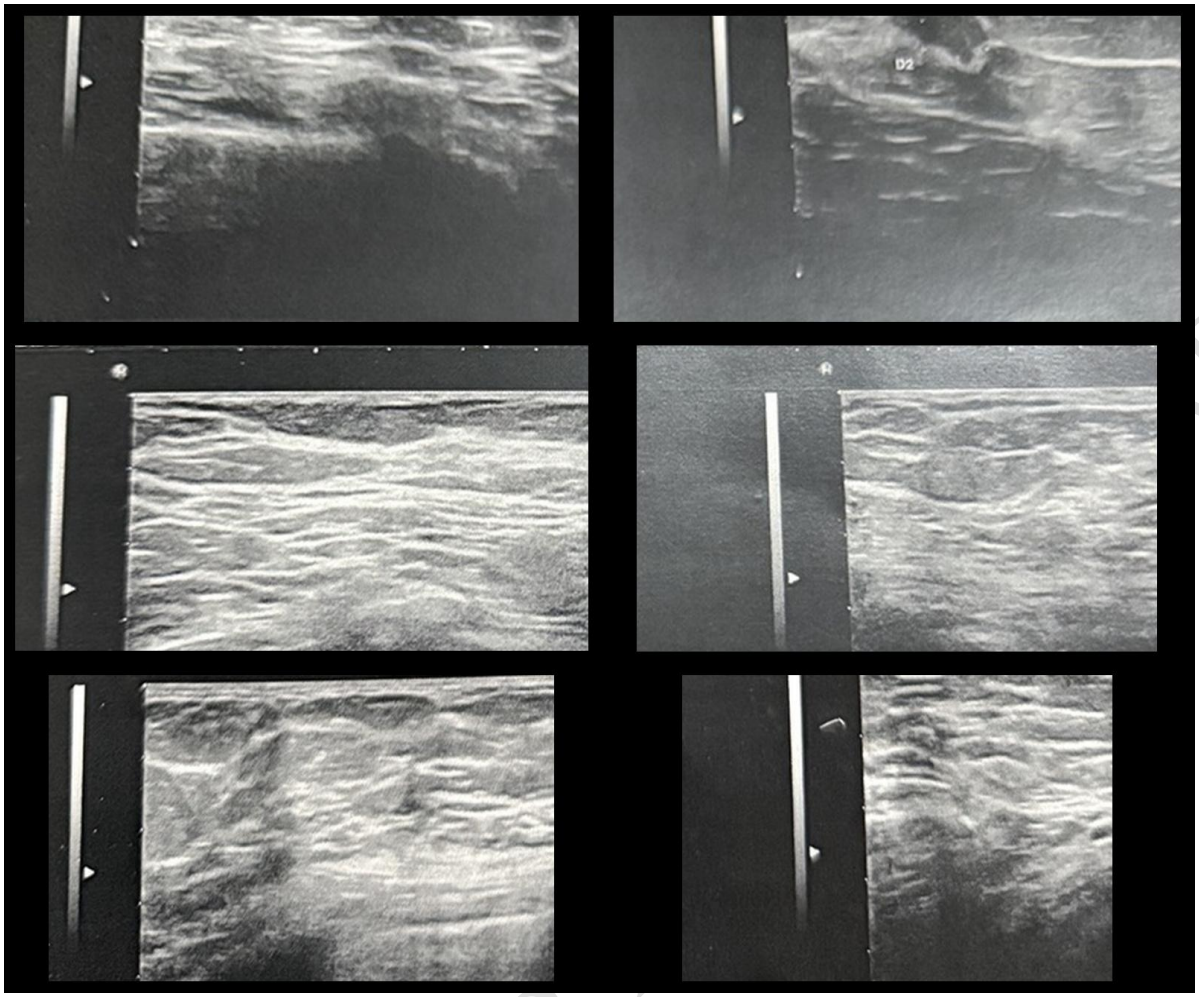

Figure 2. Targeted breast ultrasonography. Multiple views show the irregular hypoechoic, non-circumscribed lesion in the left breast, classified as ACR 5.

Core-needle biopsy performed on 17 May 2024 demonstrated invasive ductal carcinoma, grade 2 according to the Scarff-Bloom-Richardson system (score 3 + 2 + 1). In current terminology, this corresponds to invasive breast carcinoma of no special type when no specific histologic pattern is identified. Invasion and intermediate histologic grade were established; however, the estrogen receptor, progesterone receptor, HER2, and Ki-67 results required for biologic classification and systemic-treatment planning were unavailable in the reviewed documents. The tumor therefore could not be retrospectively assigned to a luminal, HER2-positive, or triple-negative subtype, and the systemic regimen could not be confidently attributed to the breast malignancy.

Gastric tumor assessment

As part of the staging work-up for the breast carcinoma, thoracoabdominopelvic CT was performed on 16 May 2024. It confirmed the left-breast lesion, measuring approximately 15 × 12 mm, without documented proof of breast-cancer metastasis in the available records. The major unexpected finding was a 107 × 108 mm heterogeneous gastric mass arising from the fundus and greater curvature. The lesion contained central necrosis, fistulized into the gastric lumen, displaced the stomach, closely abutted the spleen, and extended toward the left border of the aorta while retaining a described separation plane. Its size, exophytic gastric origin, internal necrosis, and fistulization were discordant with the small breast primary and made a simple gastric metastasis unlikely, prompting dedicated endoscopic and histologic assessment (Figure 3).

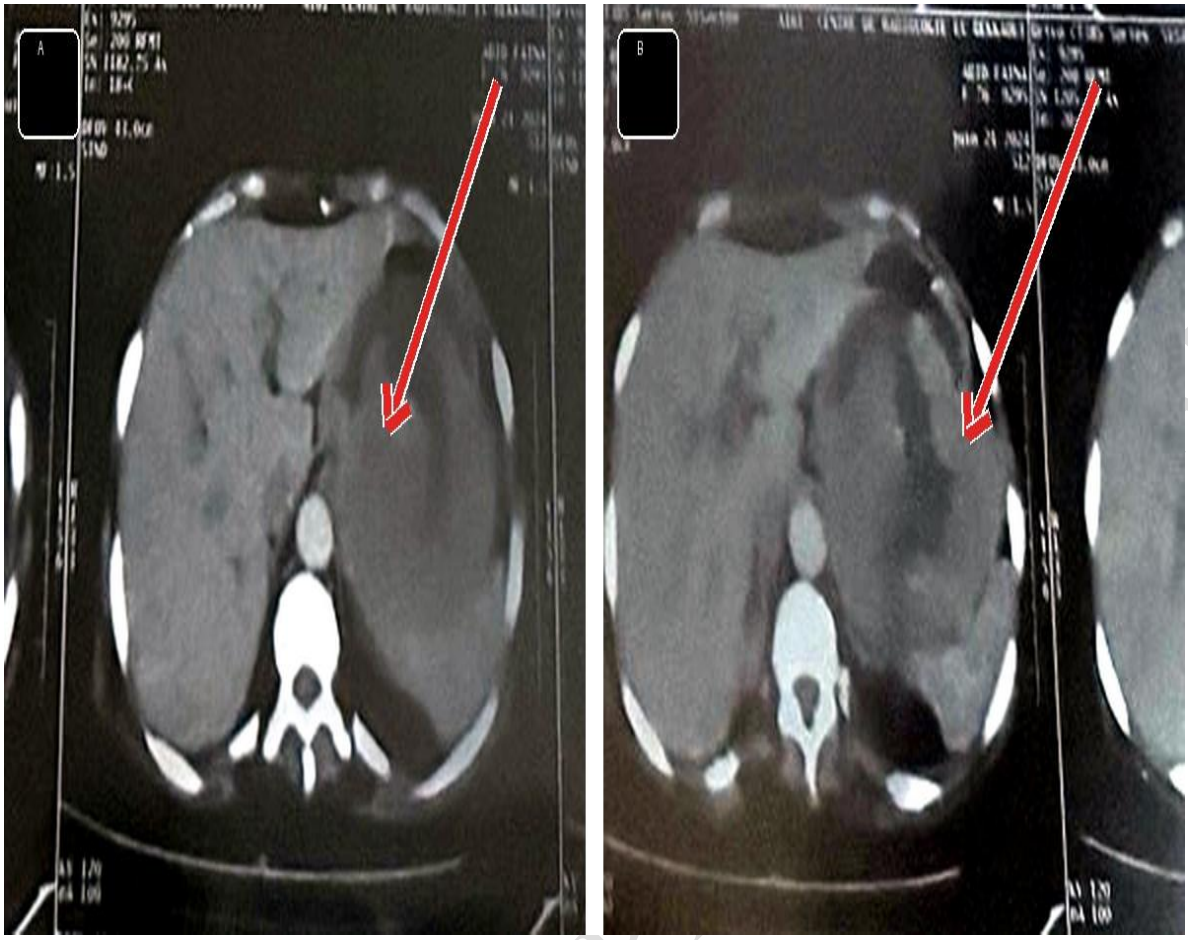

Figure 3. Representative axial contrast-enhanced CT images showing the large heterogeneous left upper abdominal mass centered on the gastric fundus and greater curvature, with necrotic change.

Upper gastrointestinal endoscopy demonstrated an ulceroproliferative fundic lesion related to the endoluminal fistulization and allowed tissue sampling. Gastric biopsy showed a spindle-cell neoplasm. Immunohistochemistry demonstrated strong, diffuse CD117 (c-KIT) expression. DOG1 was negative, as were pancytokeratin AE1/AE3, CD45, desmin, and smooth-muscle actin. The combination of spindle-cell morphology, gastric location, and diffuse CD117 expression supported a diagnosis of GIST. Tumor grade, mitotic index, and formal recurrence-risk category could not be reliably determined on the limited biopsy fragments and would ideally require an adequately sampled resection specimen.

The main differential diagnoses included a smooth-muscle tumor, gastric schwannoma, inflammatory myofibroblastic tumor, and sarcomatoid epithelial neoplasm. Negative desmin and smooth-muscle actin did not support smooth-muscle differentiation; absent cytokeratin expression argued against an epithelial malignancy; and diffuse CD117 favored GIST. DOG1 negativity did not exclude GIST, but it increased the importance of morphologic correlation and, if adequate material became available, molecular testing for KIT and PDGFRA. Such testing would also have predictive value for selecting and anticipating sensitivity to tyrosine-kinase inhibitors.

The principal pathologic differential diagnoses for a gastric spindle-cell lesion included leiomyoma or leiomyosarcoma, schwannoma, inflammatory myofibroblastic tumor, and a sarcomatoid epithelial malignancy. The absence of desmin and smooth-muscle actin argued against smooth-muscle differentiation, absence of pancytokeratin argued against an epithelial neoplasm, and diffuse CD117 expression favored GIST. Because DOG1 was negative and the biopsy was limited, correlation with morphology, molecular analysis, and—if subsequently resected—examination of the complete specimen remained important.

Treatment and follow-up

The case was reviewed in a multidisciplinary setting involving oncology, surgery, gastroenterology, radiology, and pathology. The coexistence of two primary malignancies required assessment of which tumor posed the most immediate threat, whether the gastric mass was resectable, the risk created by necrosis and fistulization, and the biologic subtype of the breast cancer. Given the bulky, necrotic, fistulized gastric disease and the complexity of immediate surgery, the available records described a palliative systemic-treatment strategy. Treatment was referred to as chemotherapy and remained ongoing at the latest follow-up. The exact regimen, dose, number of cycles, toxicity, principal target tumor, and radiologic response were not available. Cytotoxic chemotherapy for breast cancer must not be conflated with genotype-directed tyrosine-kinase inhibition for GIST without documentation.

Timeline

Date	Clinical event	Key finding
14 May 2024	Breast ultrasonography and mammography	15 × 10 mm spiculated left breast lesion, ACR 5.
16 May 2024	Staging thoracoabdominopelvic CT	Incidental 107 × 108 mm necrotic gastric fundic mass, fistulized into the lumen.
17 May 2024	Left breast core biopsy	Grade 2 invasive ductal carcinoma, SBR score 3 + 2 + 1.
After CT, 2024	Upper gastrointestinal endoscopy	Ulceroproliferative fundic lesion; biopsies obtained.
June 2024	Gastric biopsy and immunohistochemistry	Spindle-cell tumor; CD117 strong diffuse positive; profile supportive of GIST.
Ongoing follow-up	Systemic treatment	Palliative treatment ongoing; regimen and objective response not documented in available records.

Discussion

Two primary tumors rather than metastatic disease

The central diagnostic issue was whether the gastric mass represented metastatic breast cancer, a primary gastric epithelial malignancy, or an independent mesenchymal neoplasm. In this patient, the profound discrepancy in tumor size, exophytic fundic morphology, central necrosis, fistulization, spindle-cell histology, and diffuse CD117 expression were incompatible with assuming a breast-cancer metastasis. Separate tissue sampling of both sites therefore converted what could have been interpreted as stage IV breast cancer into a true dual oncologic diagnosis with different prognostic and therapeutic implications.

Tumors are generally termed synchronous when they are diagnosed simultaneously or within a short predefined interval. Synchronism does not establish a shared cause. Proposed explanations for the coexistence of GIST and other cancers include older age, increased cross-sectional imaging and endoscopic surveillance, shared environmental exposures, inherited susceptibility, and specific tumor-predisposition syndromes. No clinical feature in the available history established a hereditary syndrome; this association should therefore be considered sporadic unless additional family or molecular data indicate otherwise.

The coexistence of GIST and another malignancy has been documented in institutional and population-based cohorts. In a US population analysis, 17.1% of 6,112 patients with GIST had an additional cancer [8]. A

clinicopathologic series of 260 patients likewise reported malignancies diagnosed before, concurrently with, or after GIST [9]. Associated tumors have included gastrointestinal, genitourinary, cutaneous, hematologic, and breast cancers; however, synchronous breast carcinoma and gastric GIST remain uncommon [10,11]. Reported frequency depends strongly on age, surveillance intensity, referral patterns, and the definition of synchronism and does not by itself prove a biologic link.

Importance of the incidental staging finding

The gastric tumor was not the presenting complaint; it was detected incidentally during CT staging of the breast malignancy. This sequence illustrates why every structure included in a staging examination must be evaluated and why an unexpected lesion should not automatically be labeled metastatic. Features prompting reconsideration include an unusual metastatic site, disproportionate volume, a different internal architecture, exophytic growth, necrosis, fistulization, and absence of other typical metastatic deposits. Independent biopsy is crucial when the result can alter stage, prognosis, treatment intent, or treatment sequencing.

A gastric mass of this size carries risks specific to advanced GIST, including intraluminal bleeding, anemia, tumor rupture, perforation, infection of necrotic components, pain, obstruction, and compression of adjacent organs. Fistulization into the stomach was a clinically relevant local complication and required close coordination among oncology, surgical, and gastroenterology teams. New pain, fever, hematemesis, melena, falling hemoglobin, or inflammatory abnormalities should trigger urgent reassessment.

Pathologic interpretation of the gastric lesion

Most GISTs express KIT/CD117, while DOG1 is a sensitive complementary marker, particularly in KIT-negative or morphologically unusual tumors [3–6]. DOG1 negativity alone does not exclude GIST. Interpretation should integrate anatomic site, architecture, cytology, CD117, DOG1, CD34, smooth-muscle and neural markers, and exclusion of epithelial and hematolymphoid neoplasms. In this case, diffuse strong CD117 expression, spindle-cell morphology, and negative AE1/AE3, CD45, desmin, and smooth-muscle actin supported GIST. KIT and PDGFRA mutation testing would have been desirable for both diagnostic refinement and prediction of response or resistance to tyrosine-kinase inhibitors.

Risk assessment for localized GIST is based mainly on tumor size, primary site, mitotic rate, and tumor rupture. Gastric location is generally associated with a more favorable course than intestinal location at comparable size and mitotic activity, but a tumor exceeding 10 cm remains concerning. Formal risk classification was not possible here because mitotic activity on a limited biopsy may be unrepresentative and no resection specimen was available. Nevertheless, the marked size, necrosis, and fistulization indicated locally advanced disease requiring specialist management.

Therapeutic implications

For localized, resectable GIST, the objective is en-bloc complete excision with microscopically negative margins and avoidance of pseudocapsule rupture, because rupture markedly increases the risk of peritoneal dissemination. Routine lymph-node dissection is usually unnecessary because nodal metastases are uncommon. For a bulky or locally advanced lesion in which immediate surgery would require highly morbid multivisceral resection, genotype-directed preoperative tyrosine-kinase inhibition may be considered to reduce tumor volume and facilitate a less extensive operation [3,4]. For unresectable or metastatic disease, imatinib is the standard first-line treatment for most sensitive genotypes; dose selection and subsequent lines depend on mutation profile, tolerance, and disease progression.

Molecular testing for KIT and PDGFRA should precede targeted treatment whenever feasible. Some alterations predict substantial sensitivity, whereas PDGFRA D842V is classically resistant to imatinib and requires a different targeted approach. Early response assessment should not rely exclusively on size reduction: decreased density, vascularity, or enhancement may precede dimensional shrinkage. Contrast-enhanced CT is the principal follow-up modality, and GIST-adapted morphologic response criteria may complement RECIST measurements.

Management of the breast carcinoma likewise depends on anatomic stage, tumor size, nodal status, estrogen and progesterone receptors, HER2, Ki-67, biologic age, and comorbidities. For a small operable lesion, local treatment commonly involves breast-conserving surgery when feasible, appropriate axillary staging, and radiotherapy

according to indication. Systemic therapy is subtype-specific: endocrine therapy for hormone-receptor-positive disease, anti-HER2 therapy for HER2-positive disease, and chemotherapy according to clinical risk, biologic subtype, and expected tolerance. Missing receptor results and nodal staging prevented reconstruction of the definitive breast-treatment plan in this report.

Two active tumors require individualized prioritization. A small breast primary may sometimes permit deferred or simplified local management when a large fistulized GIST poses an immediate risk of bleeding, rupture, or sepsis. Conversely, a biologically aggressive breast subtype may require prompt systemic therapy. Treatment sequencing must consider drug interactions, cumulative toxicity, nutritional status, infection risk, the feasibility of future surgery, and the likelihood that a chosen agent will control one or both tumors. Tumor size alone is therefore insufficient to determine priority.

Follow-up should document the exact regimen, doses, modifications, toxicity, hematologic and hepatic parameters, nutritional status, serial measurements, and evolving resectability. GIST surveillance should assess changes in size, density, enhancement, bleeding, rupture, and fistulization. Breast-cancer reassessment should document the primary and nodal response and define the subsequent surgical and radiotherapy plan. Discordant behavior of the two lesions may require repeat biopsy or molecular reassessment. Response should be reported separately for each tumor to avoid attributing global improvement to a treatment active against only one malignancy.

Strengths and limitations

The principal strength of this report is tissue confirmation of two synchronous tumors of different lineages, supported by concordant imaging and an informative immunohistochemical panel. It illustrates a major oncologic pitfall: considering every lesion found during staging to be metastatic. Important limitations remain, including missing complete breast biomarkers, absent KIT/PDGFRA genotype, limited gastric sampling precluding reliable mitotic assessment, unavailable treatment-regimen details, lack of serial response measurements, and short documented follow-up. Before journal submission, these items should be sought in oncology records, multidisciplinary-meeting reports, treatment charts, and follow-up imaging.

Conclusion

This case describes two distinct synchronous primary malignancies: grade 2 invasive breast carcinoma and a giant necrotic, fistulized gastric GIST discovered incidentally during staging. Separate histologic confirmation excluded a gastric metastasis and established a genuine dual diagnosis. The case emphasizes systematic evaluation of atypical staging findings, integration of imaging with morphology and immunohistochemistry, and multidisciplinary treatment planning. Therapeutic priority should reflect immediate clinical risk, resectability, biomarkers, and the expected sensitivity of each tumor. Complete documentation of the systemic regimen and serial imaging remains necessary to finalize the report and assess oncologic outcome.

Patient perspective

A formal patient-perspective statement was not available in the reviewed clinical documentation.

Declarations

Consent for publication. Written informed consent for publication must be documented before journal submission. All figures in this manuscript have been cropped to remove direct identifiers.

Ethics approval. Institutional requirements for publication of a single case report should be confirmed before submission.

Conflicts of interest. The authors declare no conflict of interest.

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Author contributions. D.M. drafted the manuscript and assembled the clinical data. F.F.Z. contributed to data acquisition and manuscript review. Z.C. supervised clinical interpretation and critically revised the manuscript. A.M. supervised the work and approved the final version. All authors should verify and approve this statement before submission.

Data availability. Clinical data supporting this report are contained within the article. Additional source data are subject to patient confidentiality and institutional authorization.

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