Non-invasive breast carcinoma

Non-invasive = basement membrane is intact.

Non-invasive carcinoma means malignant epithelial cells are present but **they have not crossed the basement membrane**. Therefore, by definition, they have not invaded stroma.

Condition	Key definition	Important features	Exam clue
DCIS	Malignant ductal epithelial proliferation confined within ducts	Enlarged ducts lined by atypical cells; intact basement membrane; microcalcifications; may have central necrosis	Non-invasive carcinoma of the breast = DCIS
Comedocarcinoma	High-grade DCIS pattern	Central necrosis inside ducts with dystrophic calcification	High-grade nuclei + central necrosis = comedo pattern

EXAM TRAP

Do not confuse: DCIS is malignant, but it is still **in situ**. The basement membrane is intact. Once the basement membrane is crossed, it becomes invasive carcinoma.

Why microcalcifications matter

- Necrosis inside ducts can calcify.
- These calcifications may be detected on mammography.
- That is why DCIS can be diagnosed before a palpable mass appears.

16. Noninvasive ca of the breast:
A) Comedo
B) Medullary
C) Mucinous
D) Infiltrative ductal
E) papillary

ANSWER : A

Invasive carcinoma: the main types

Invasive = tumor crosses basement membrane and enters stroma.

Once carcinoma invades stroma, it can access lymphatics and blood vessels. This is why invasive tumors can metastasize and why nodal status becomes important.

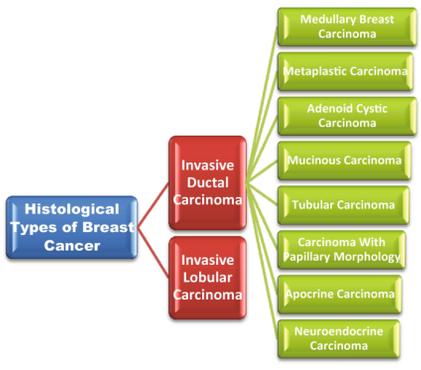
Type	Core idea	Microscopic clue	Exam memory
Invasive ductal carcinoma, NST	Most common invasive breast carcinoma	Disorganized duct-like/glandular cells invading stroma; desmoplastic fibrotic reaction; may show microcalcifications	Hard irregular mass due to desmoplastic stroma
Invasive lobular carcinoma	Important invasive subtype related to loss of cell adhesion	Monomorphic cells arranged in single-file pattern; classically E-cadherin loss	Single-file cells = invasive lobular carcinoma

RULE

Most common invasive carcinoma: invasive ductal carcinoma NST.
Classic single-file pattern: invasive lobular carcinoma.

Why invasive ductal carcinoma feels hard

- The tumor stimulates a fibrotic stromal response called **desmoplasia**.
- Desmoplasia makes the mass firm, hard, and irregular.
- This is different from the soft/fleshy or gelatinous feel of some special histologic types.



Special histologic types of invasive breast carcinoma

These are frequently tested because they have special clues and prognoses.

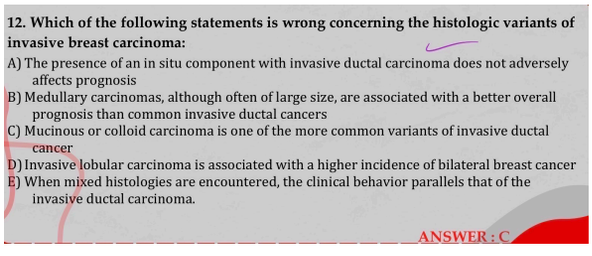
Type	High-yield clue	Receptor/prognosis idea
Tubular carcinoma	Well-differentiated tubular structures; absent myoepithelial layer; usually well circumscribed	Generally favorable prognosis
Mucinous carcinoma	Tumor cells floating in pools of extracellular mucin; soft/gelatinous mass; often older women	Generally favorable prognosis
Medullary carcinoma	Well-circumscribed soft/fleshy tumor; large poorly differentiated cells; pushing borders; prominent lymphoplasmacytic infiltrate	Often triple-negative, may be BRCA1-associated, but prognosis better than expected
Papillary carcinoma	Papillary fronds/projections, often central/ductal and in older women	Often favorable compared with ordinary invasive ductal carcinoma
Metaplastic carcinoma	Carcinoma showing squamous/spindle/chondroid/osseous or other non-glandular differentiation	Usually aggressive compared with favorable special types
Apocrine carcinoma	Apocrine morphology with abundant eosinophilic granular cytoplasm	Variable
Neuroendocrine carcinoma	Neuroendocrine differentiation	Variable

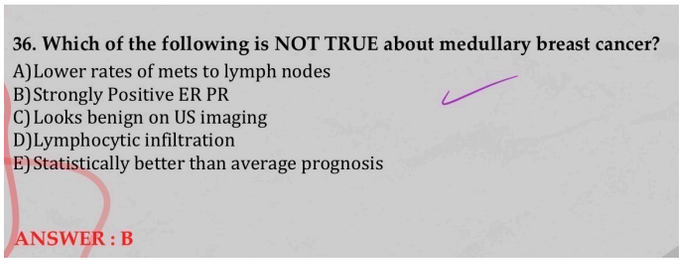
EXAM TRAP

Medullary exam trap: It is **not strongly ER/PR positive**. It is commonly triple-negative, but its lymphoplasmacytic infiltrate and pushing border explain the better-than-expected prognosis.

RULE

Good prognosis group to remember: tubular, mucinous, papillary, and medullary often have better prognosis than ordinary invasive ductal carcinoma, although details depend on stage and biology.


12. Which of the following statements is wrong concerning the histologic variants of invasive breast carcinoma:
A) The presence of an in situ component with invasive ductal carcinoma does not adversely affects prognosis
B) Medullary carcinomas, although often of large size, are associated with a better overall prognosis than common invasive ductal cancers
C) Mucinous or colloid carcinoma is one of the more common variants of invasive ductal cancer
D) Invasive lobular carcinoma is associated with a higher incidence of bilateral breast cancer
E) When mixed histologies are encountered, the clinical behavior parallels that of the invasive ductal carcinoma.
ANSWER : C


36. Which of the following is NOT TRUE about medullary breast cancer?
A) Lower rates of mets to lymph nodes
B) Strongly Positive ER PR
C) Looks benign on US imaging
D) Lymphocytic infiltration
E) Statistically better than average prognosis
ANSWER : B

Paget disease and phyllodes tumor

Separate these from ordinary invasive carcinoma in your mind.

A. Paget disease of the breast

Item	Meaning
Definition	Malignant cells involving the nipple epidermis, usually associated with underlying DCIS or invasive carcinoma
Clinical picture	Eczematous nipple lesion: red, scaly, crusted, itchy/burning nipple; may erode
Pathology	Large malignant Paget cells within epidermis
Exam clue	Eczematous nipple lesion + breast carcinoma = Paget disease of breast

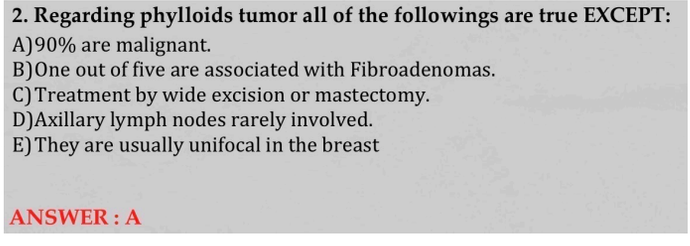
B. Phyllodes tumor

Phyllodes tumor is a **fibroepithelial breast tumor**. It can look like fibroadenoma clinically, but it tends to be larger, faster-growing, and occurs in older patients than fibroadenoma.

Category	High-yield points
Clinical features	Painless multinodular breast lump; average size around 4-7 cm; growth may be slow, rapid, or variable
Comparison with fibroadenoma	Both can look similar on examination and imaging; phyllodes is usually larger, faster-growing, and older age group
Imaging	Ultrasound: hypoechoic solid mass, may contain cysts. Mammography: hyperdense mass
Diagnosis	Biopsy is needed if phyllodes is suspected: core needle biopsy or excisional biopsy depending on case
Histology	Leaf-like architecture with papillary projections of epithelium-lined stroma
Classification	Benign, borderline, or malignant
Treatment	Wide local excision with clear margins; mastectomy if very large or clear excision not feasible
Axilla	Axillary lymph nodes are rarely involved, so axillary surgery is usually not routine

EXAM TRAP

Past-paper trap: The false statement is "90% are malignant." Most phyllodes tumors are **benign**; they are not mostly malignant.



2. Regarding phylloids tumor all of the followings are true EXCEPT:
A) 90% are malignant.
B) One out of five are associated with Fibroadenomas.
C) Treatment by wide excision or mastectomy.
D) Axillary lymph nodes rarely involved.
E) They are usually unifocal in the breast

ANSWER : A

Evaluation, staging workup, and prognostic factors

Staging tells you extent; prognosis tells you behavior.

A. Evaluation of locoregional extent

Tool	Why it is used
Bilateral mammography	Assess primary tumor, microcalcifications, multifocality, and contralateral breast
Breast ultrasound	Evaluate palpable mass and characterize cystic vs solid lesions
Axillary ultrasound	Assess suspicious axillary lymph nodes
FNA/core biopsy of suspicious node	Confirms nodal metastasis when imaging or examination is suspicious
Breast MRI	Selective use: dense breasts, multifocal/multicentric disease, discrepancy between clinical and imaging findings, or special indications

B. Evaluation for distant metastasis

Not every patient needs full metastatic imaging. Imaging is mainly used when there are symptoms, abnormal labs, or advanced disease features.

When to suspect distant metastasis	Examples
Symptoms	Bone pain, dyspnea/cough, neurological symptoms, weight loss
Abnormal labs	Hypercalcemia, abnormal liver enzymes, unexplained abnormalities
Advanced disease	Large tumor, heavy nodal burden, locally advanced signs

C. Major prognostic factors

Factor	Worse prognosis when...
Tumor size	Larger tumor
Nodal status	More positive lymph nodes
Distant metastasis	Present
Grade	High grade
Lymphovascular invasion	Present
ER/PR	Negative generally removes endocrine therapy benefit
HER2	Positive can be aggressive, but targeted therapy improves outcomes
Ki-67/proliferation	High proliferation
Molecular subtype	Triple-negative and HER2-enriched tend to be more aggressive biologically

Marker	Meaning
ER positive	May respond to endocrine therapy
PR positive	Supports hormone responsiveness
HER2 positive	May respond to HER2-targeted therapy
Triple-negative	ER-, PR-, HER2-; fewer targeted options and often aggressive biology

Special clinical situations

Pregnancy and male breast cancer have unique exam rules.

A. Breast cancer in pregnancy

Topic	Exam rule
General	Rare; your notes mention about 1 in 3000 pregnant women
Diagnosis	Workup is similar but adjusted for fetal safety; ultrasound is commonly first for a breast mass
Surgery	Surgery can generally be performed during pregnancy when indicated
Chemotherapy	Avoid in first trimester; some regimens may be considered in second/third trimester; avoid close to delivery
Contraindicated	Radiotherapy, endocrine therapy, and HER2/ERBB2-targeted therapy are contraindicated during pregnancy
Breastfeeding	Not recommended while receiving chemotherapy, endocrine therapy, or HER2-targeted therapy

RULE

Pregnancy rule: Surgery is possible. Radiotherapy, endocrine therapy, and HER2-targeted therapy are contraindicated during pregnancy. Chemotherapy is avoided in the first trimester.

B. Male breast cancer

Topic	Exam rule
Frequency	Rare; around 1% of breast cancers
Presentation	Painless retroareolar mass; nipple changes may occur; diagnosis can be delayed
Most common type	Invasive ductal carcinoma. Lobular carcinoma is uncommon because male breast has few lobules
Genetics	BRCA2 is the classic association in men; BRCA mutation is an important risk factor
Other risk factors	Family history, elevated estrogen states, Klinefelter syndrome, obesity, chronic liver disease, radiation exposure
Diagnosis	Imaging plus core biopsy; genetic counseling/testing is recommended for male breast cancer
SLNB	Sentinel lymph node biopsy is not contraindicated

EXAM TRAP

Past-paper answer: Male breast cancer is more commonly associated with **BRCA2**. It is not usually lobular, and gynecomastia alone is not a strong independent risk factor.

11. Regarding breast carcinoma in men, which statement is true:
A) lobular carcinomas is the most common type
B) It is more commonly associated with a mutation in the BRCA2 gene
C) The prognosis is worse stage for stage than for women
D) Sentinel lymph node biopsy (SLNB) is contraindicated
E) Gynecomastia is a risk factor.

ANSWER : B

1) Clinical spread language

This is the simple "where has it gone?" language:

- **Localized**: cancer is confined to the breast, with no spread outside it.
- **Regional**: cancer has spread to nearby lymph nodes or nearby structures.
- **Distant / metastatic**: cancer has spread to organs far away, such as bone, liver, lung, or brain. NCCN +1

2) Breast-surgery / oncology language

This is what your exam is using:

- **Early / localized operable breast cancer**: usually stage I and many stage II tumors.
- **Locally advanced breast cancer (LABC)**: generally **stage III**, meaning the disease is still in the breast/nearby regional area, but it is **more extensive locally**. This includes major skin involvement, chest wall involvement, bulky/fixed regional nodes, or inflammatory breast cancer. It is **regional**, not distant. Cancer.org +1

So:

- **Localized** = confined to breast
- **Locally advanced** = still regional, but extensive local/regional disease
- **Advanced metastatic** = distant spread

That is the framework that solves these questions. Cancer.org +2

What counts as "locally advanced" breast cancer?

Think of locally advanced disease as breast cancer that has become too extensive to be called just a simple breast lump with or without small nodes.

Common features include:

- **skin edema / peau d'orange**
- **skin ulceration**
- **satellite skin nodules**
- **chest wall involvement**
- **dermal lymphatic invasion**, especially in inflammatory breast cancer
- **bulky/fixed regional lymph nodes**
- supraclavicular/infraclavicular nodal disease
- sometimes **arm edema** due to major regional lymphatic obstruction. Cancer.org +1

A very important special subtype is **inflammatory breast cancer**:

- cancer cells block **lymphatics in the skin**
- causes **edema, redness, peau d'orange**
- by definition it is **at least locally advanced / stage III** when diagnosed unless it already has distant metastases. Cancer.org

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What findings are more "ordinary invasive cancer" signs rather than specifically locally advanced signs?

These can happen in invasive cancer, but they do **not by themselves mean locally advanced disease**:

- **skin dimpling**
- **nipple retraction / nipple inversion**
- a hard irregular breast mass
- axillary nodes that are present but not bulky/fixed

These are cancer signs, but they are not the classic markers of **locally advanced** disease. Locally advanced disease implies **more extensive skin/chest wall/regional involvement**. Cancer.org +1

تعديلات من مالك أبو رحمة على ملف الباست :

44. Not a sign of local invasion:

ANSWER : ~~Arm Edema~~ Skin Dimpling

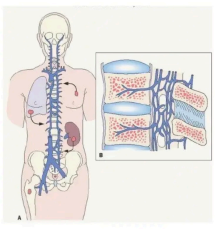
31. Not a finding in locally advanced breast CA:
A) Arm edema
B) Skin dimpling
C) Nipple inversion

ANSWER : ~~A~~ B

وانتبهوا على هاي :

6. A woman with breast cancer subsequently develops metastases in her vertebral column. The most direct route for spread of the tumor to the vertebral column was via:
A) branches of the cephalic vein
B) branches of the lateral thoracic vein
C) branches of the thoracoacromial veins
D) lymphatic vessels draining into the axilla
E) branches of the intercostal veins

ANSWER : E



Batson's plexus
Direct hematogenous spread to the spine!