

**Completing the Puzzle**  
**AJCC TNM Staging**  
**Breast**

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# OBJECTIVES

- Understanding of Breast TNM staging
- Identify clinical versus pathologic information to use in staging cases
- Case eligibility for pathologic staging

# Breast Topography Codes

## ICD-0-3

c50.0 Nipple

c50.1 Central portion of breast (subareolar, retroareolar)

c50.2 Upper Inner Quadrant

c50.3 Lower Inner Quadrant

c50.4 Upper Outer Quadrant

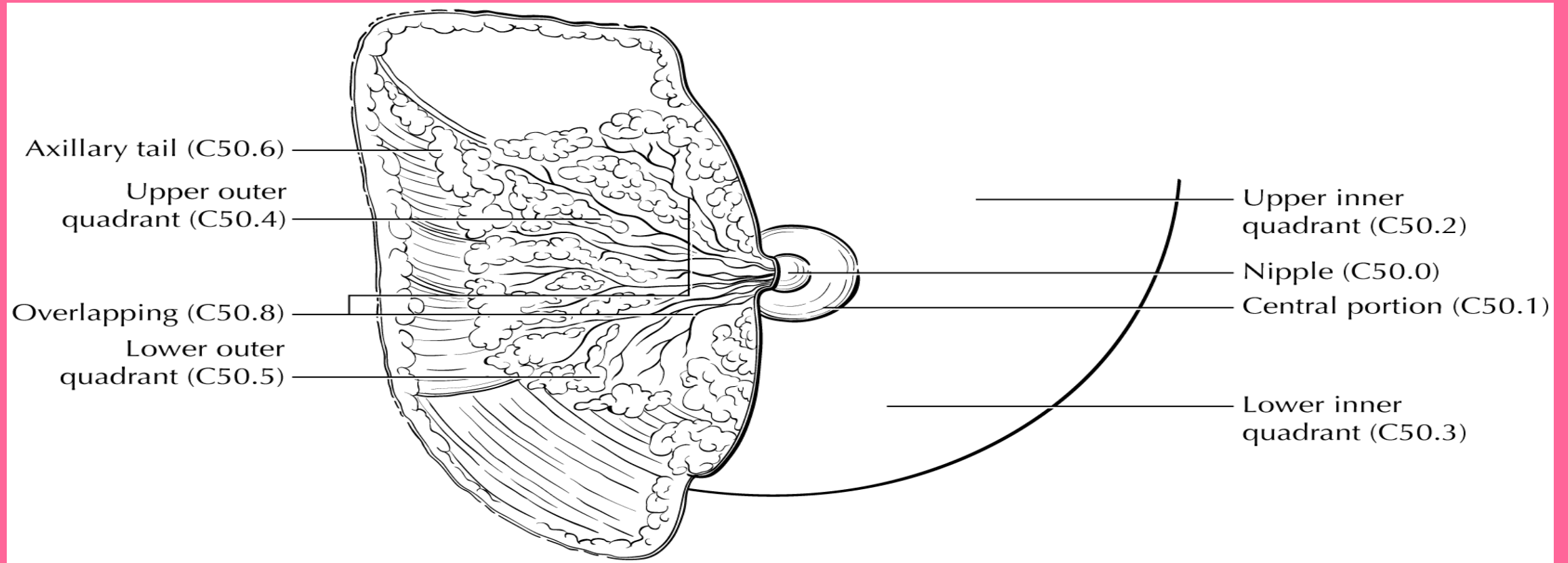
c50.5 Lower Outer Quadrant

c50.6 Axillary Tail of breast

c50.8 Overlapping lesion of breast

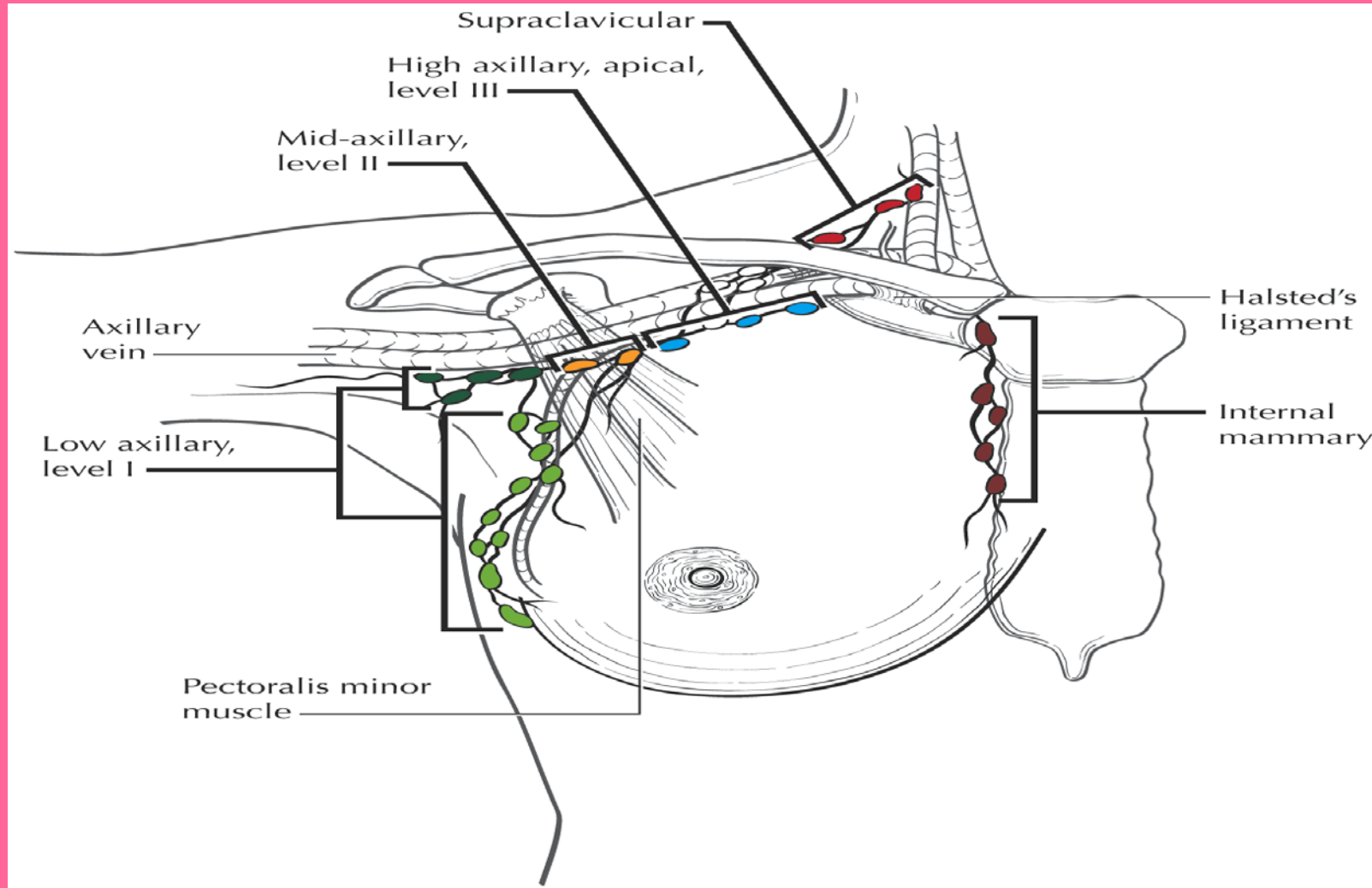
c50.9 Breast, NOS (Use for multifocal tumors in different subsites)

# Breast



Anatomic sites and subsites of the breast.

# Breast



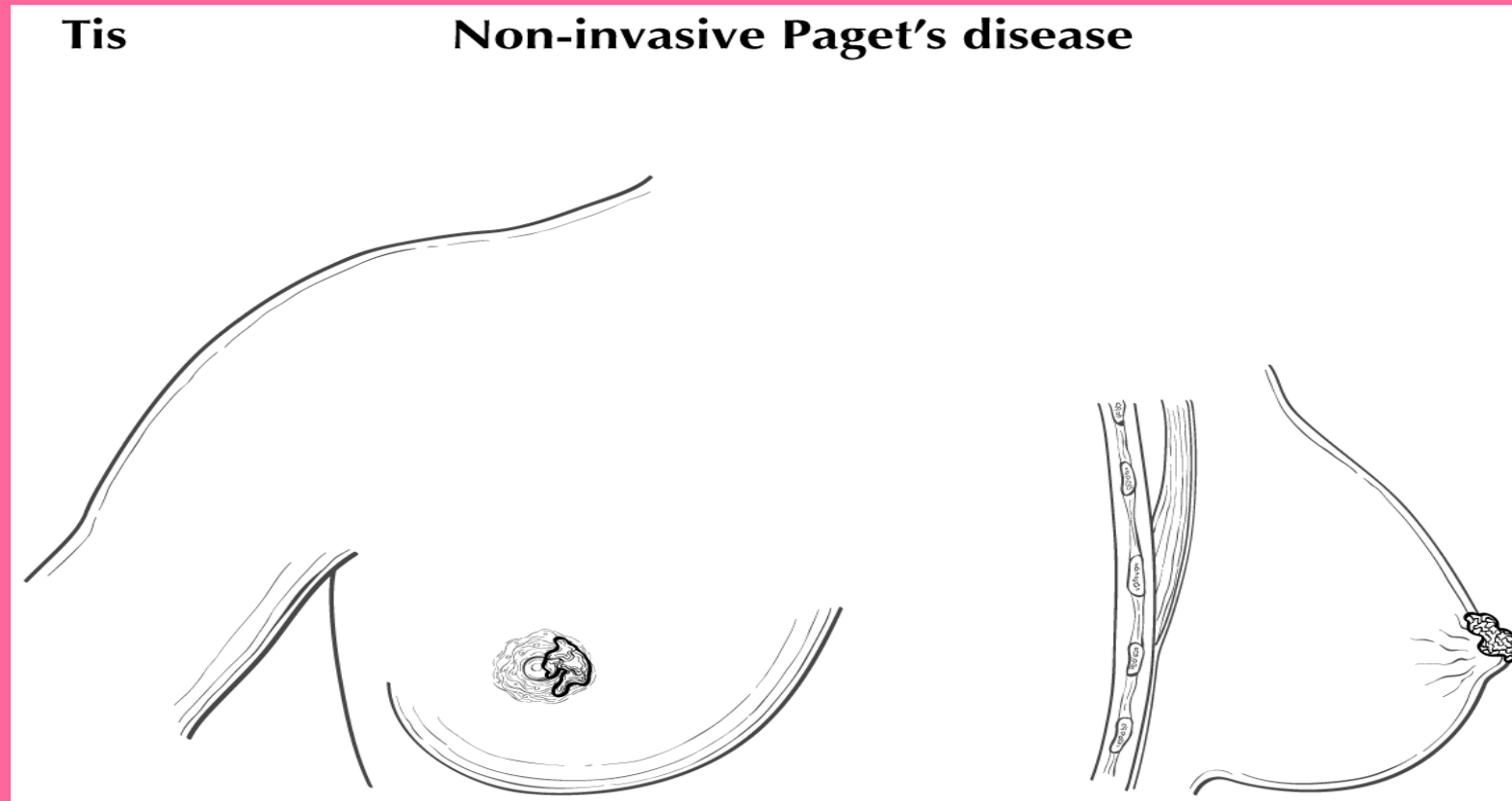
Schematic diagram of the breast and regional lymph nodes.

# AJCC T classifications

- **TX** Primary tumor cannot be assessed
- **T0** No evidence of primary tumor
- **Tis** Carcinoma in-situ
- **Tis (DCIS)** Ductal carcinoma in-situ
- **TIS (LCIS)** Lobular carcinoma in-situ
- **Tis (Paget's)** Paget's disease of the nipple NOT associated with invasive carcinoma and/or carcinoma in-situ (DCIS/LCIS) in the underlying breast parenchyma. Carcinoma in the breast parenchyma associated with Paget's disease are categorized based on the size and characteristics of the parenchymal disease, although the presence of Paget's disease should still be noted.



# Breast



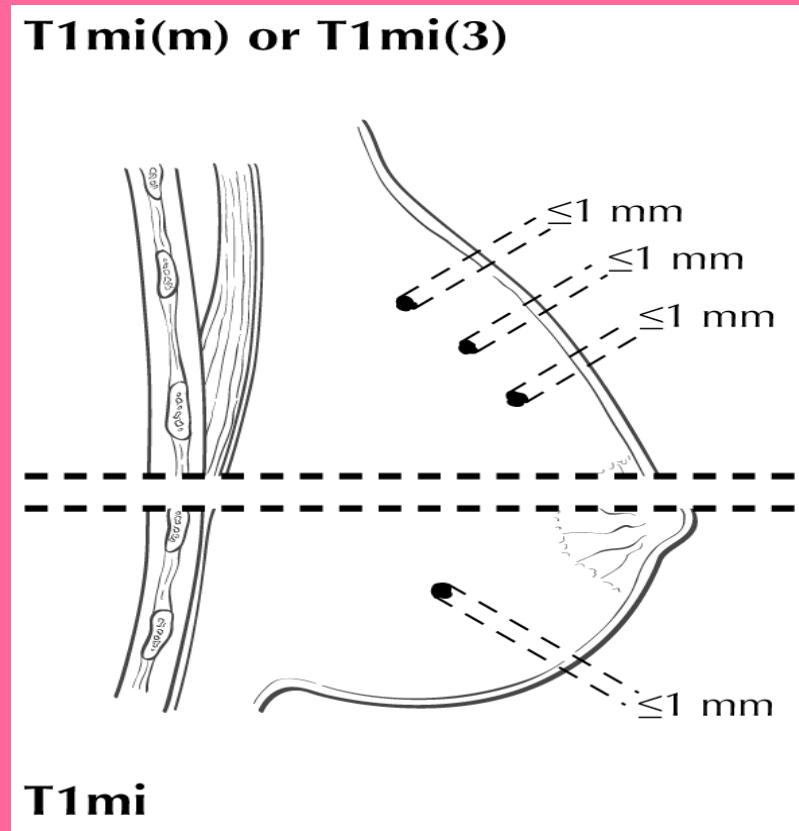
Tis (Paget's) is defined as Paget's disease of the nipple with no tumor.

# AJCC T classifications

- **T1** Tumor 20 mm or less in greatest dimension
- **T1mi** Tumor 1 mm or less in greatest dimension
- **T1a** Tumor greater than 1 mm but less than or equal to 5 mm in greatest dimension
- **T1b** Tumor greater than 5 mm but less than or equal to 10 mm in greatest dimension
- **T1c** Tumor greater than 10 mm but less than or equal to 20 mm in greatest dimension

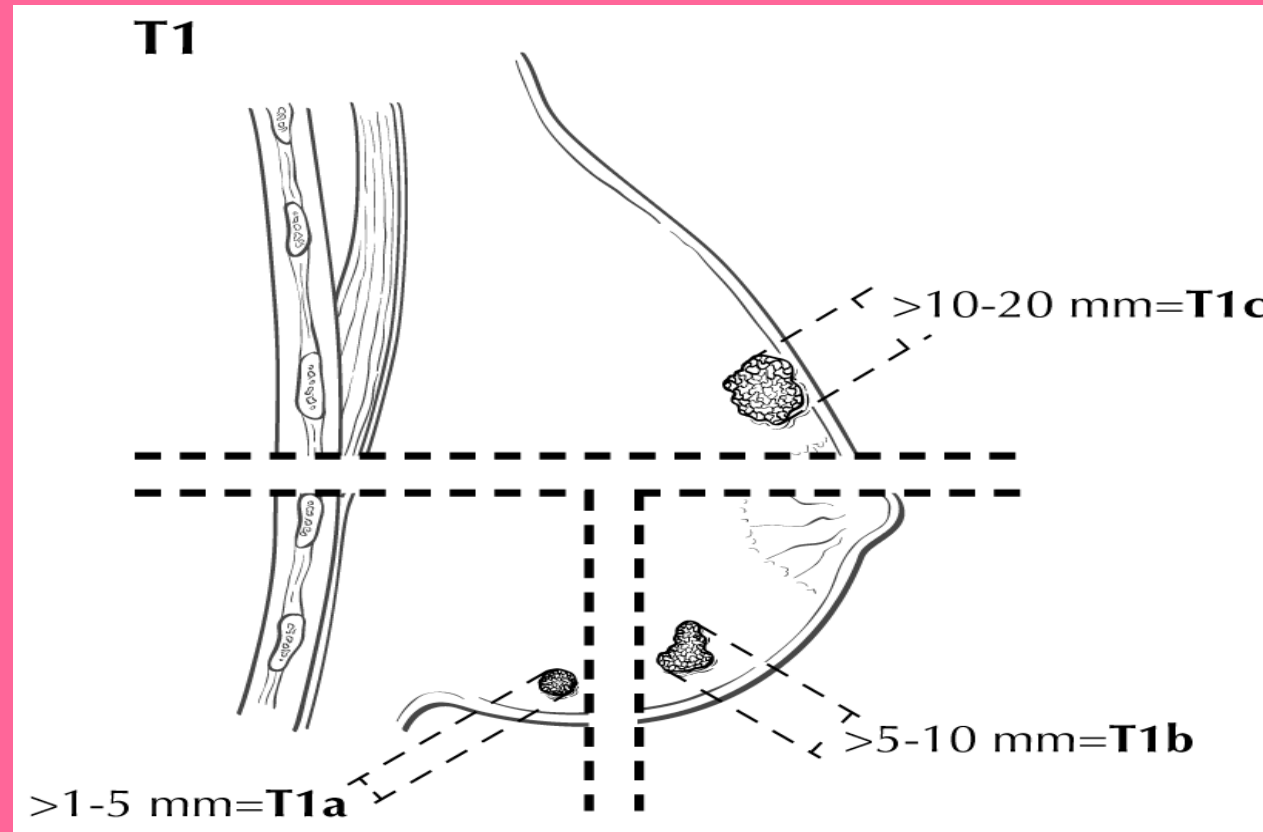


# Breast



T1mi is defined as microinvasion 1 mm or less in greatest dimension. The presence of multiple tumor foci of microinvasion (top of diagram) should be noted in parentheses.

# Breast

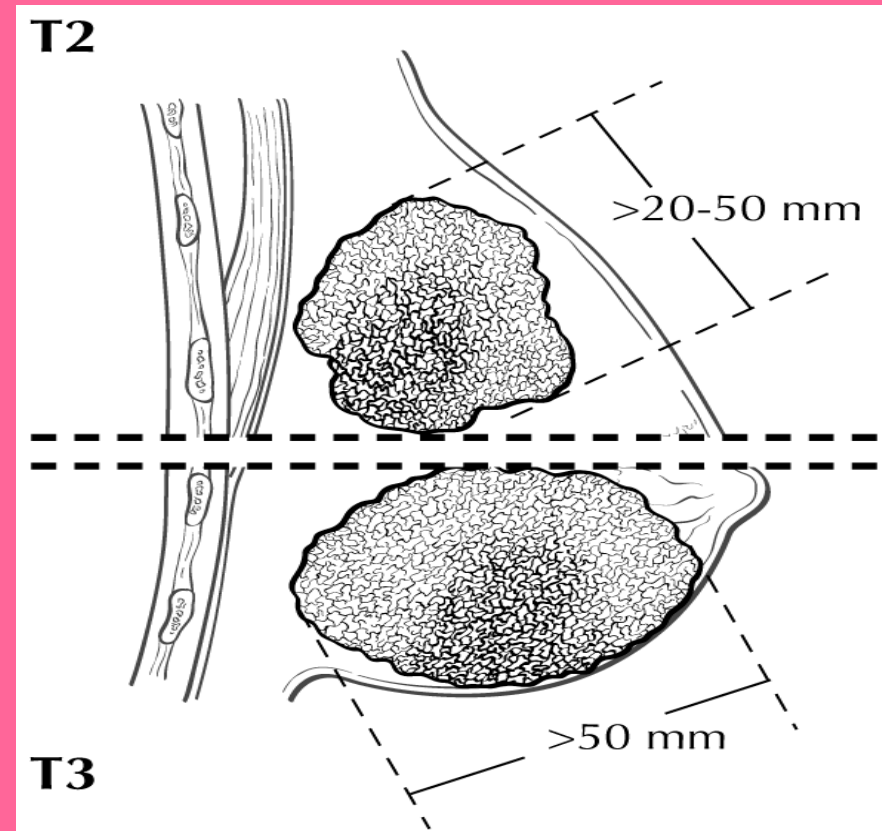


T1 is defined as a tumor 20 mm or less in greatest dimension. T1a is defined as tumor more than 1 mm but not more than 5 mm in greatest dimension; T1b is defined as tumor more than 5 mm but not more than 10 mm in greatest dimension; T1c is defined as tumor more than 10 mm but not more than 20 mm in greatest dimension.

# AJCC T classifications

- **T2** Tumor greater than 20 mm but less than or equal to 50 mm in greatest dimension
- **T3** Tumor greater than 50 mm in greatest dimension

# Breast

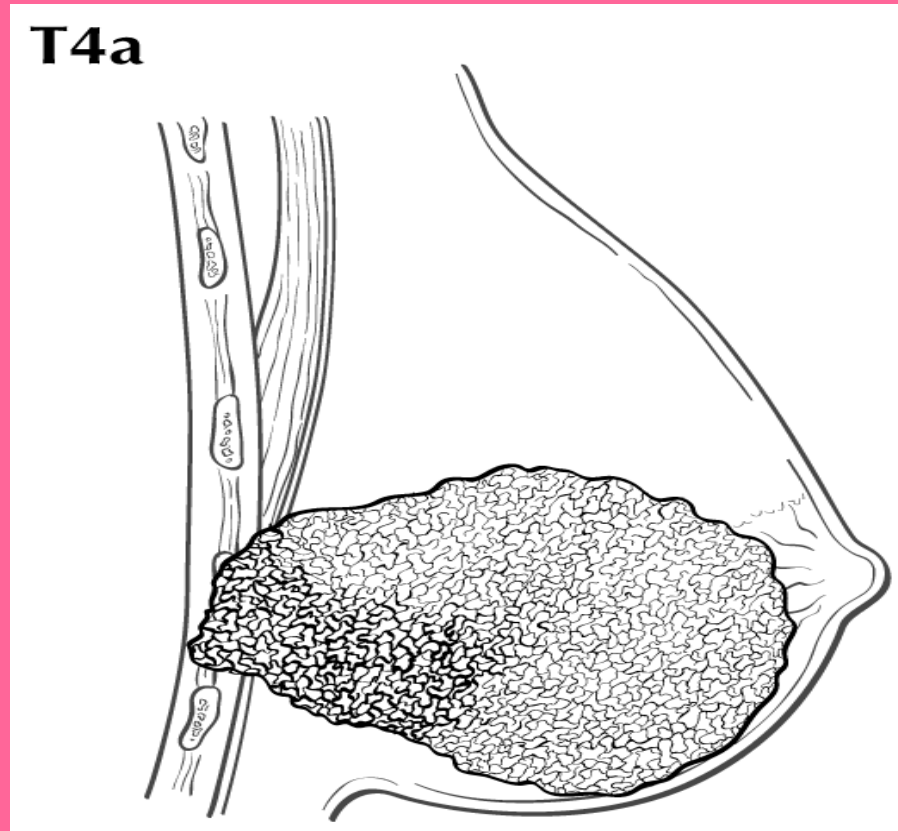


T2 (above dotted line) is defined as tumor more than 20 mm but not more than 50 mm in greatest dimension, and T3 (below dotted line) is defined as tumor more than 50 mm in greatest dimension.

# AJCC T classifications

- **T4** Tumor of any size with direct extension to the chest wall and/or to the skin (ulceration or skin nodules)
- **T4a** Extension to the chest wall, not including only pectoralis muscle adherence/invasion

# Breast



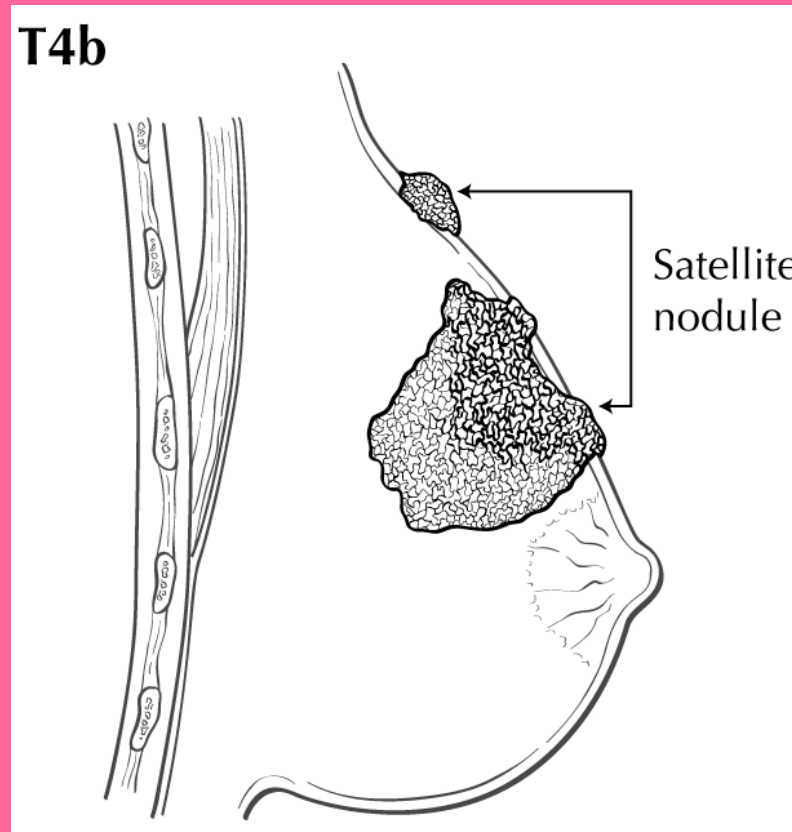
T4 is defined as a tumor of any size with direct extension to chest wall and/or to the skin (ulceration or skin nodules).  
T4a (illustrated here) is extension to the chest wall, not including only pectoralis muscle adherence/invasion.



# AJCC T classifications

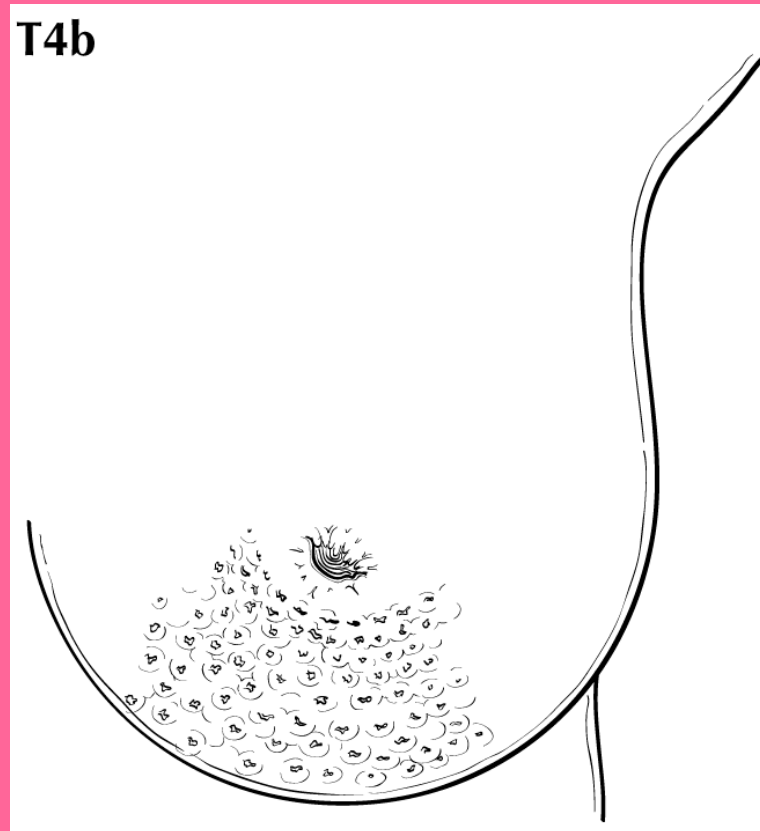
- **T4b** Ulceration and/or ipsilateral satellite nodules and/or edema (including peau d'orange) of the skin, which do not meet the criteria for inflammatory carcinoma

# Breast



T4b, illustrated here as satellite skin nodules, is defined as edema (including peau d'orange) of the skin, or ulceration of the skin of the breast, or satellite skin nodules confined to the same breast. These do not meet the criteria for inflammatory carcinoma.

# Breast

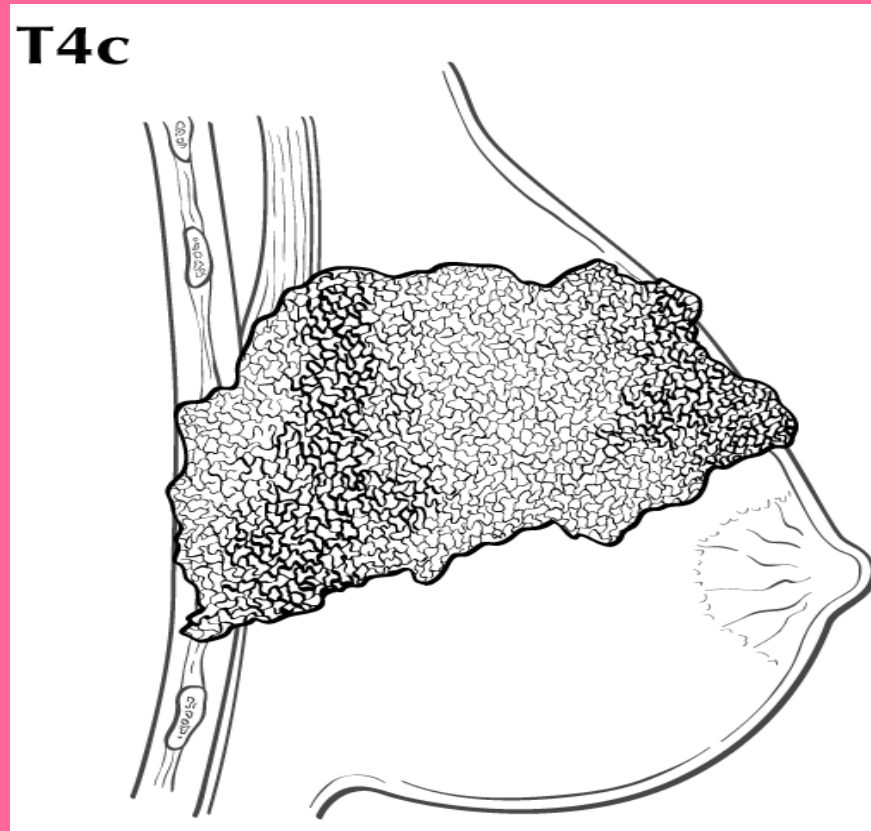


T4b illustrated here as edema (including peau d'orange) of the skin.

# AJCC T classifications

- **T4c** Both T4a and T4b

# Breast



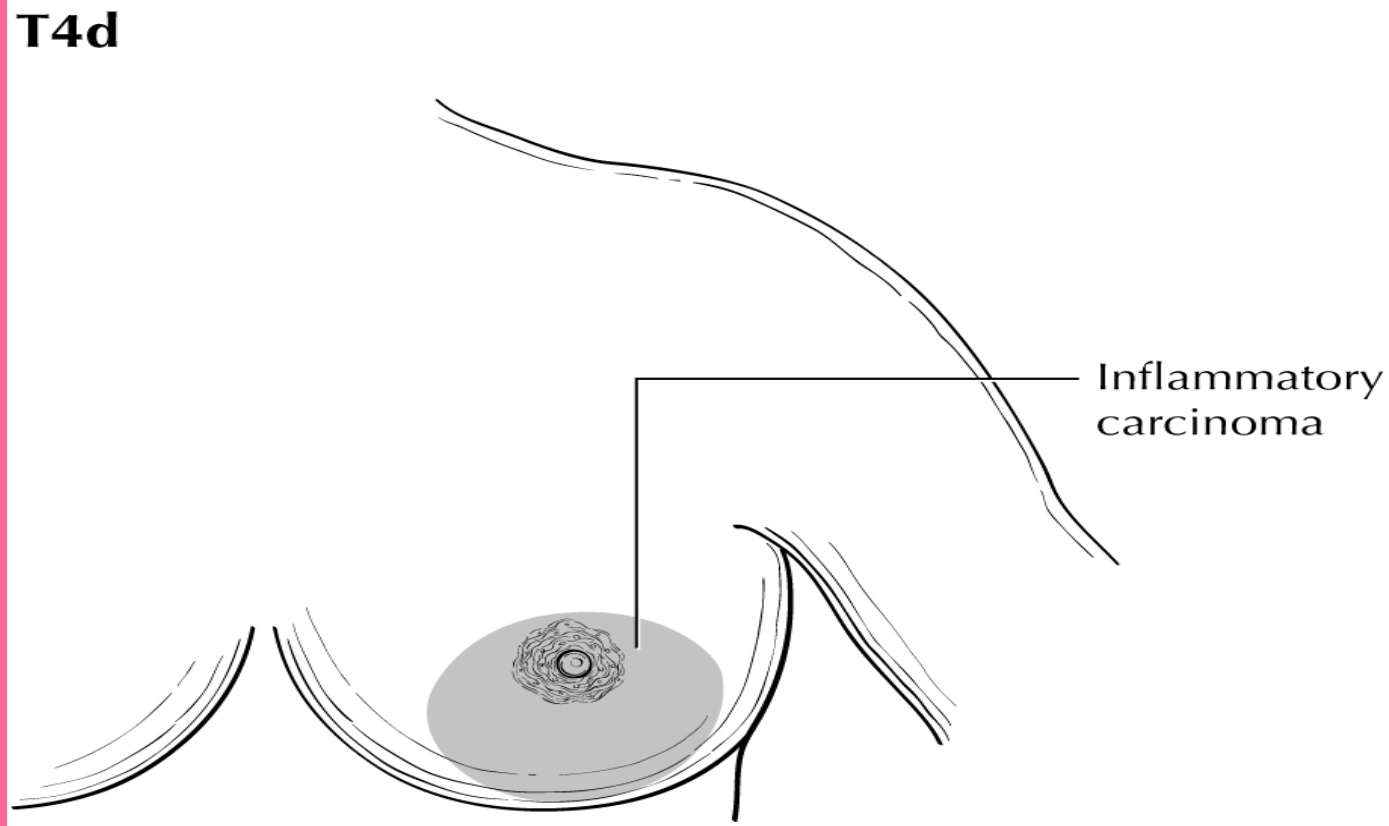
T4c is defined as both T4a and T4b.

# AJCC T classifications

- **T4d** Inflammatory carcinoma (see “Rules for Classification” on page 356 AJCC staging manual)



# Breast

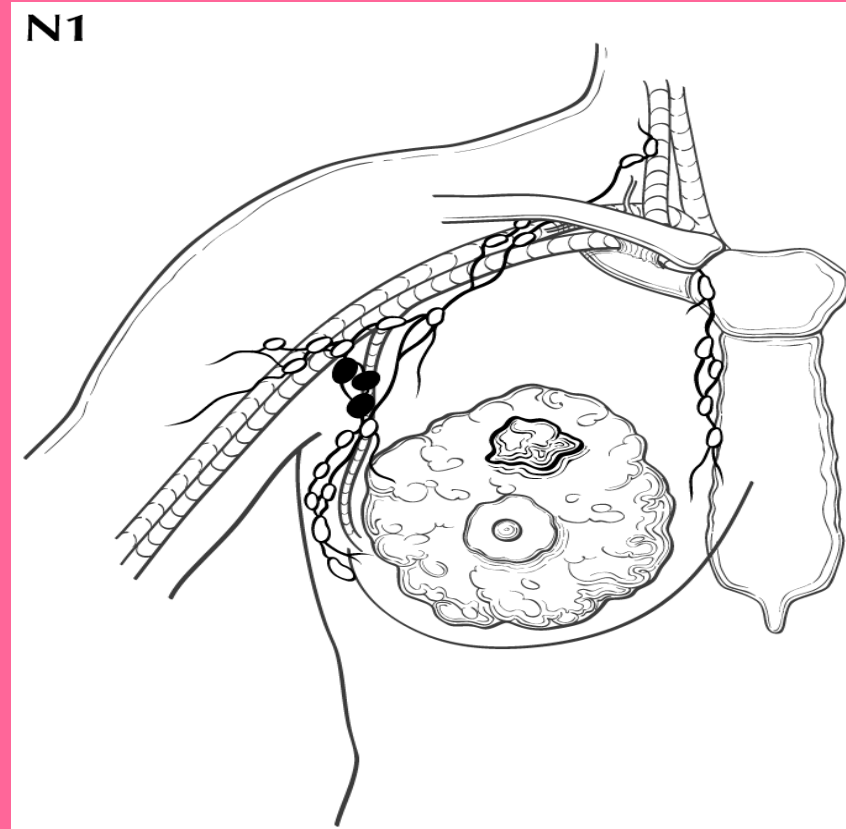


T4d is inflammatory carcinoma.

# AJCC Clinical N classifications

- **NX** Regional lymph nodes cannot be assessed (e.g., previously removed)
- **N0** No regional lymph node metastases
- **N1** Metastases to movable ipsilateral level I, II axillary lymph node(s)

# Breast



N1 is defined as metastasis in movable ipsilateral level I, II axillary lymph node(s).

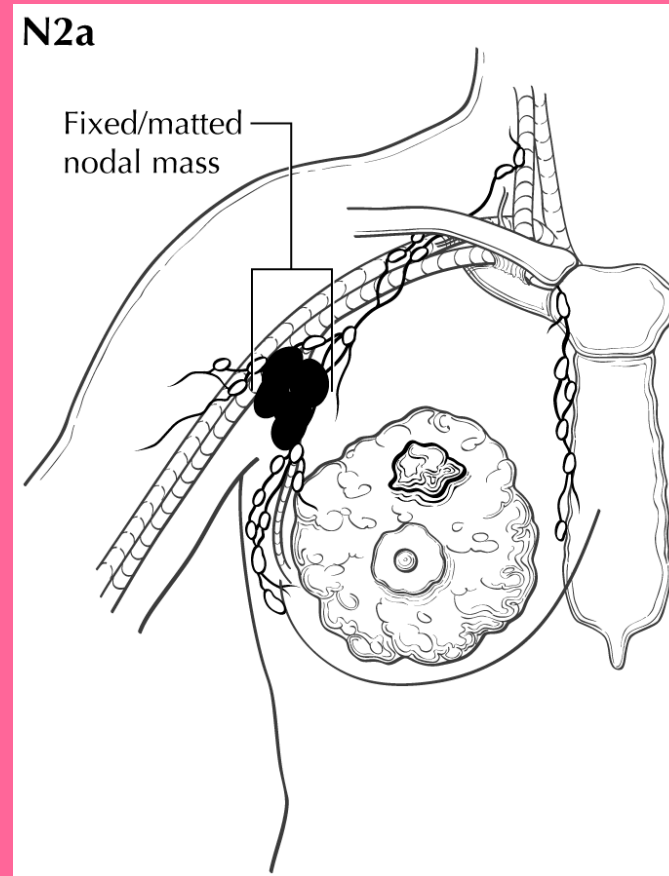
# AJCC Clinical N classifications

- **N2** Metastases in ipsilateral level I, II axillary lymph nodes that are clinically fixed or matted; or in clinically detected ipsilateral internal mammary nodes in the absence of clinically evident axillary lymph node metastases

# AJCC Clinical N classifications

- **N2a** Metastases in ipsilateral level I, II axillary lymph nodes fixed to one another (matted) or to other structures
- **N2b** Metastases only in clinically detected ipsilateral internal mammary nodes in the absence of clinically evident level I, II axillary lymph node metastases

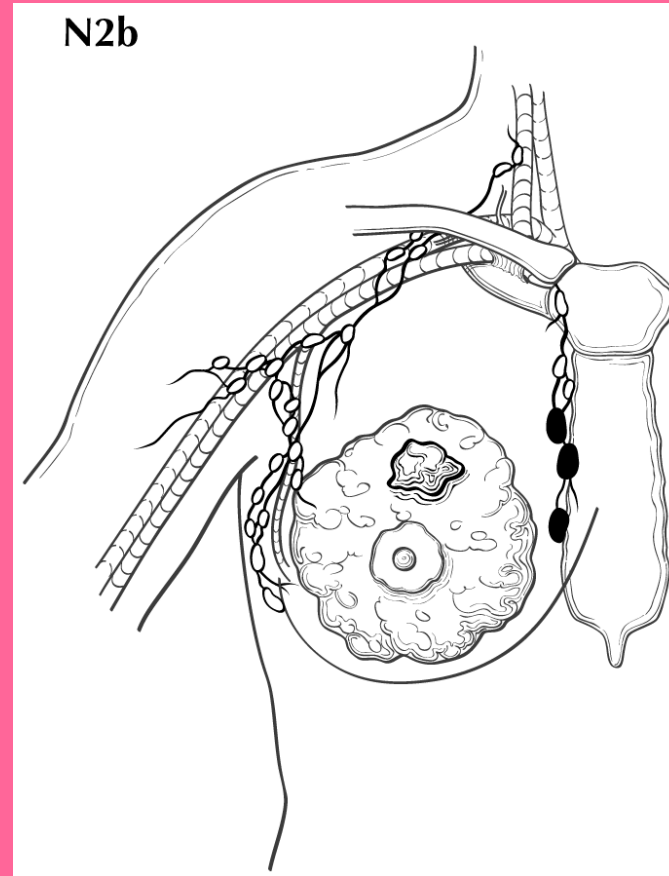
# Breast



N2a is defined as metastasis in ipsilateral level I, II axillary lymph nodes fixed to one another (matted) or to other structures.



# Breast



N2b is defined as metastasis only in clinically detected ipsilateral internal mammary nodes and in the *absence* of clinically evident level I, II axillary lymph node metastasis.

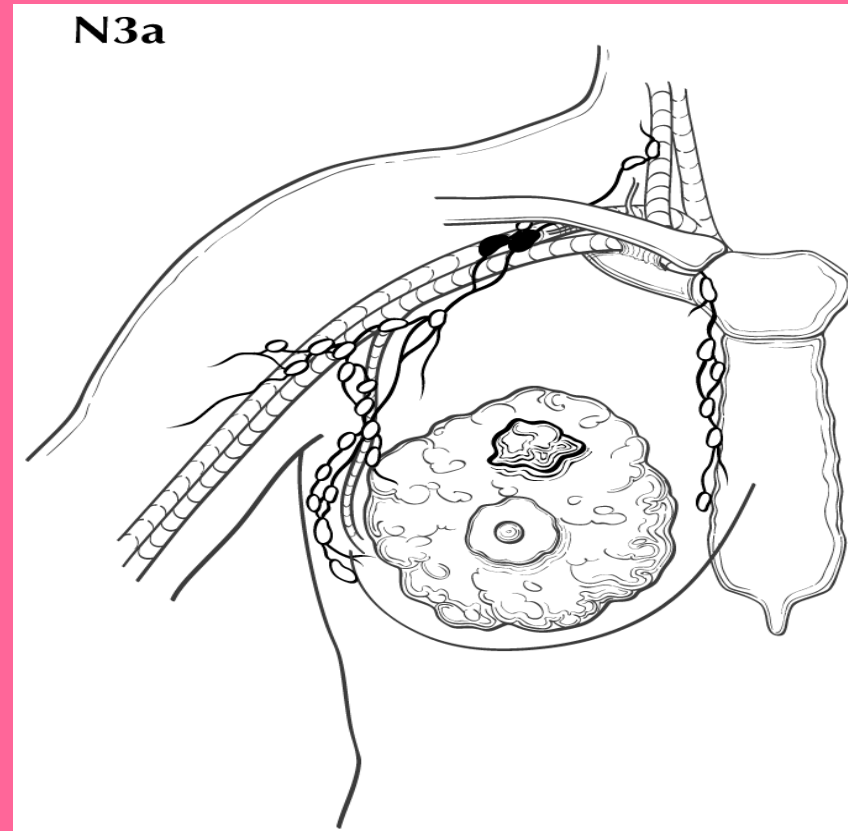
# AJCC Clinical N classifications

- **N3** Metastases in ipsilateral infraclavicular (level III axillary) lymph node(s) with or without level I, II axillary lymph node involvement; or in clinically detected ipsilateral internal mammary lymph node(s) with clinically evident level I, II axillary lymph node metastases; or metastases in ipsilateral supraclavicular lymph node(s) with or without axillary or internal mammary lymph node involvement

# AJCC Clinical N classifications

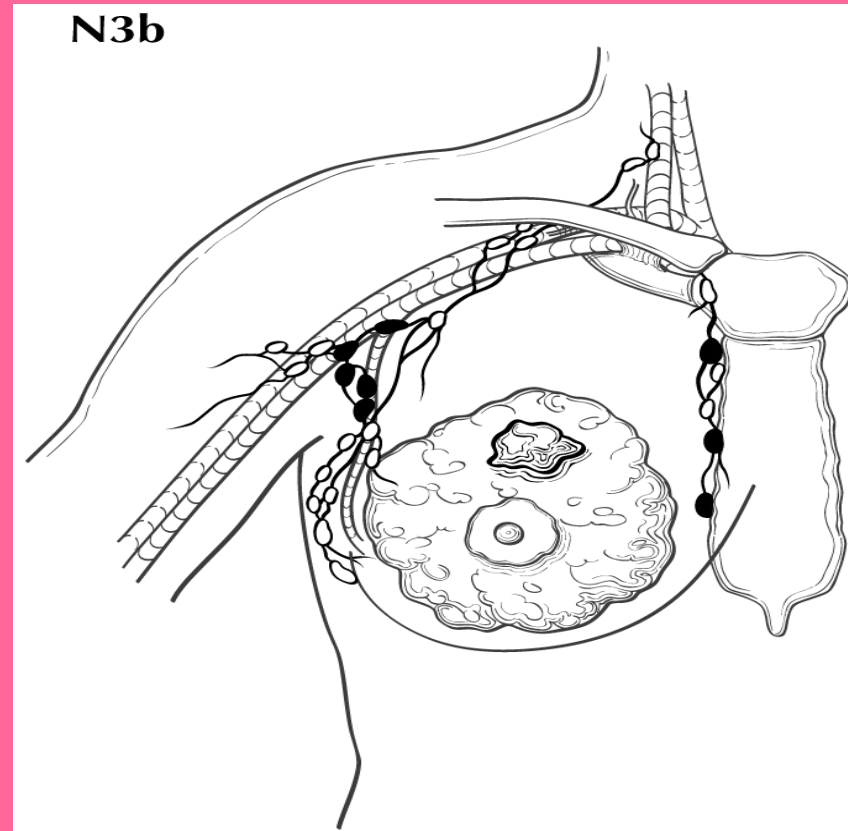
- **N3a** Metastases in ipsilateral infraclavicular (level III axillary) lymph node(s)
- **N3b** Metastases in ipsilateral internal mammary lymph node(s) and axillary lymph node(s)
- **N3c** Metastases in ipsilateral supraclavicular lymph node(s)

# Breast



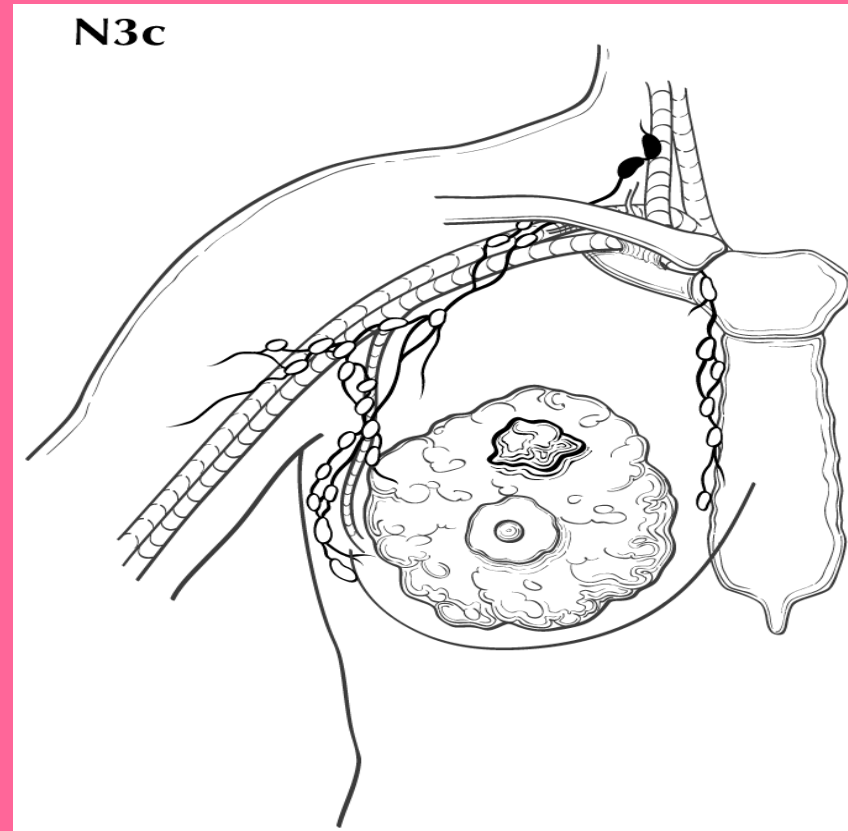
N3a is defined as metastasis in ipsilateral infraclavicular (level III axillary) lymph node(s) with or without level I, II axillary lymph node involvement.

# Breast



N3b is defined as metastasis in clinically detected ipsilateral internal mammary lymph node(s) and clinically evident axillary lymph node(s).

# Breast



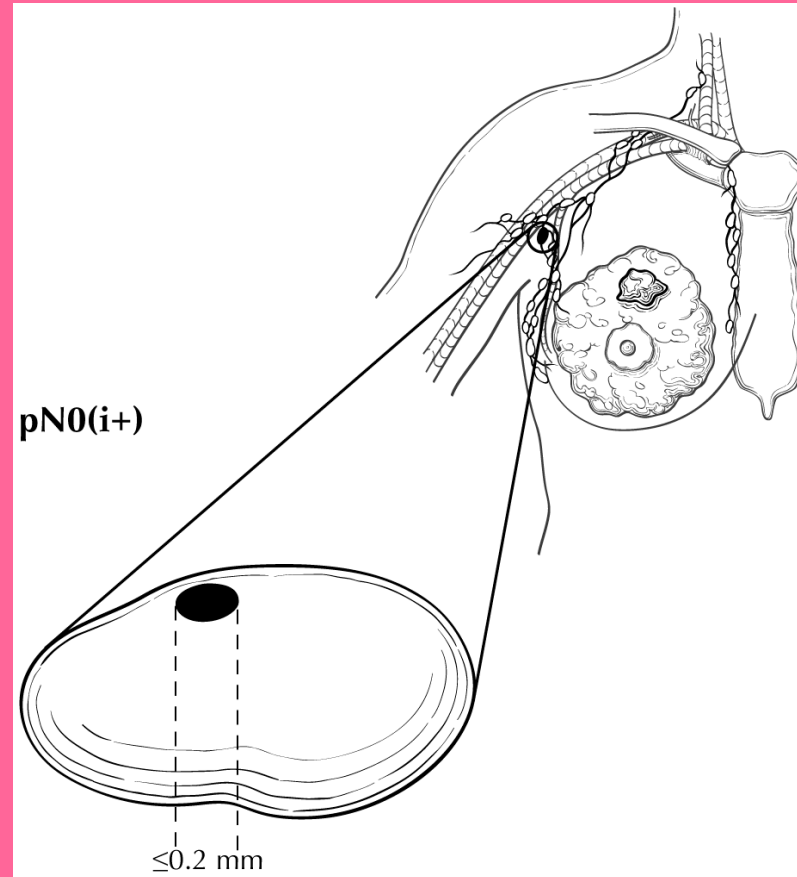
N3c is defined as metastasis in ipsilateral supraclavicular lymph node(s) with or without axillary or internal mammary lymph node involvement.



# AJCC Pathologic N classifications

- **NX** Regional lymph nodes cannot be assessed
- **N0** No regional lymph node metastases
- **N0(i-)** No regional lymph node metastases histologically, negative IHC
- **N0(i+)** Malignant cells in regional lymph nodes, no greater than 0.2m (detected by H & E or IHC including ITC)
- **N0(mol -)** No regional lymph node metastases histologically, negative molecular findings
- **N0(mol +)** Positive molecular findings but no regional lymph node metastases histologically or by IHC

# Breast

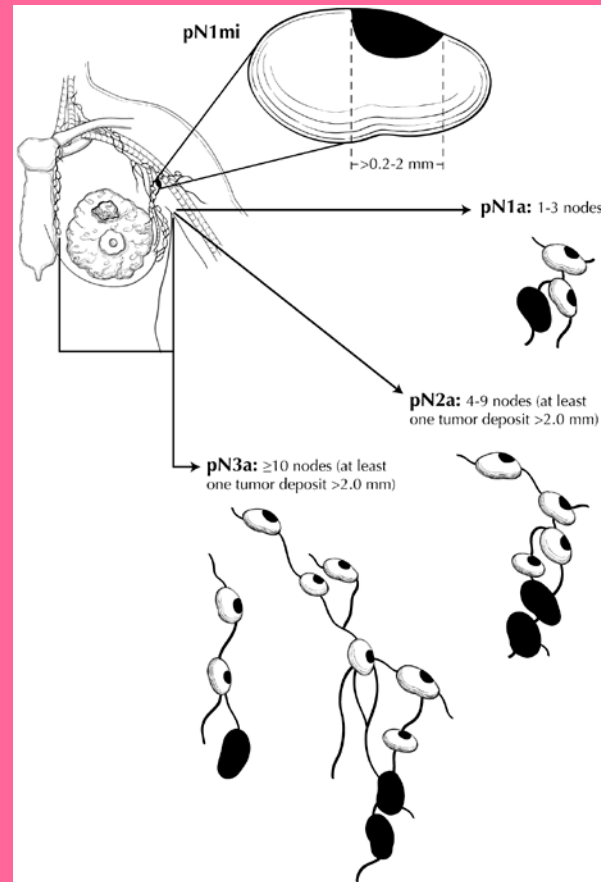


pN0(i<sup>+</sup>) is defined as malignant cells in regional lymph node(s) no greater than 0.2 mm (detected by H&E or IHC including ITC).

# AJCC Pathologic N classifications

- **N1mi** Micrometastases (greater than 0.2 mm and/or more than 200 cells, but none greater than 2.0 mm)
- **N1a** Metastases in 1 to 3 axillary LNs, at least one metastases greater than 2.0 mm

# Breast

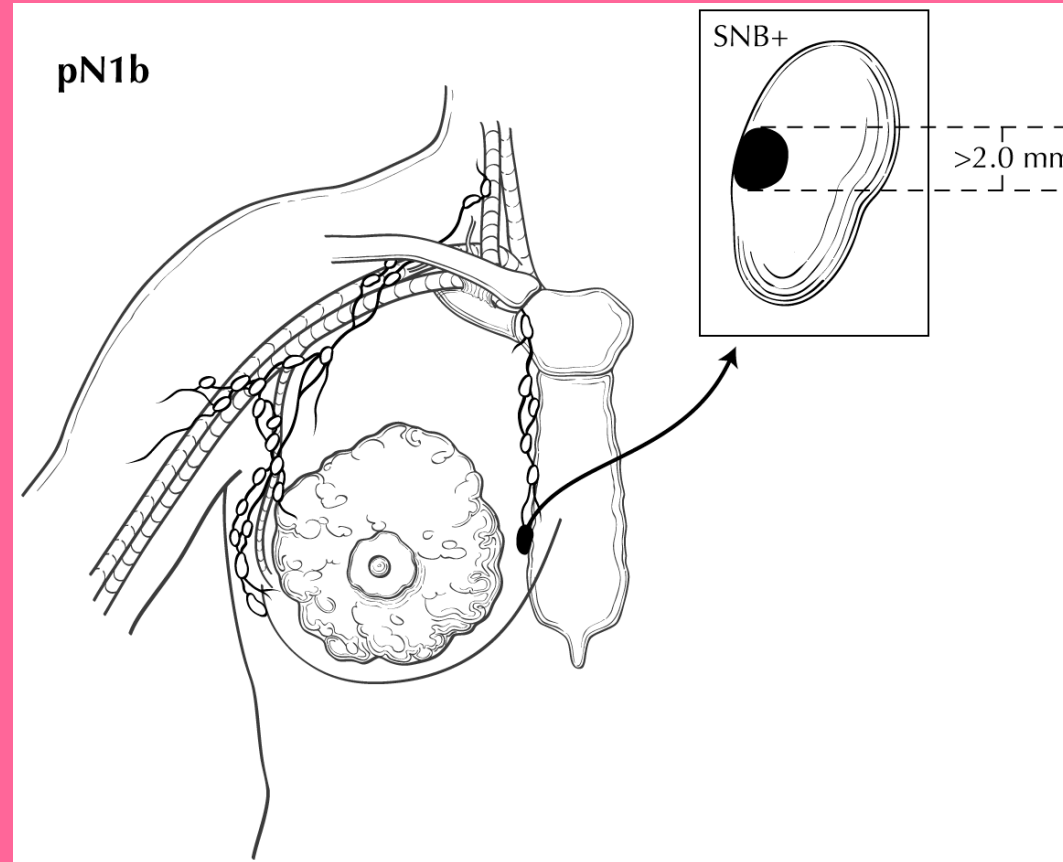


Illustrated definition of pN1mi, defined as micrometastasis greater than 0.2 mm and/or more than 200 cells, but none greater than 2.0 mm. Also illustrated are pN1a defined as metastases in 1-3 axillary lymph nodes, at least one metastasis greater than 2.0 mm; pN2a defined as metastases in 4-9 axillary lymph nodes (at least one tumor deposit greater than 2.0 mm); and pN3a defined as metastases in ten or more axillary lymph nodes (at least one tumor deposit greater than 2.0 mm).

# AJCC Pathologic N classifications

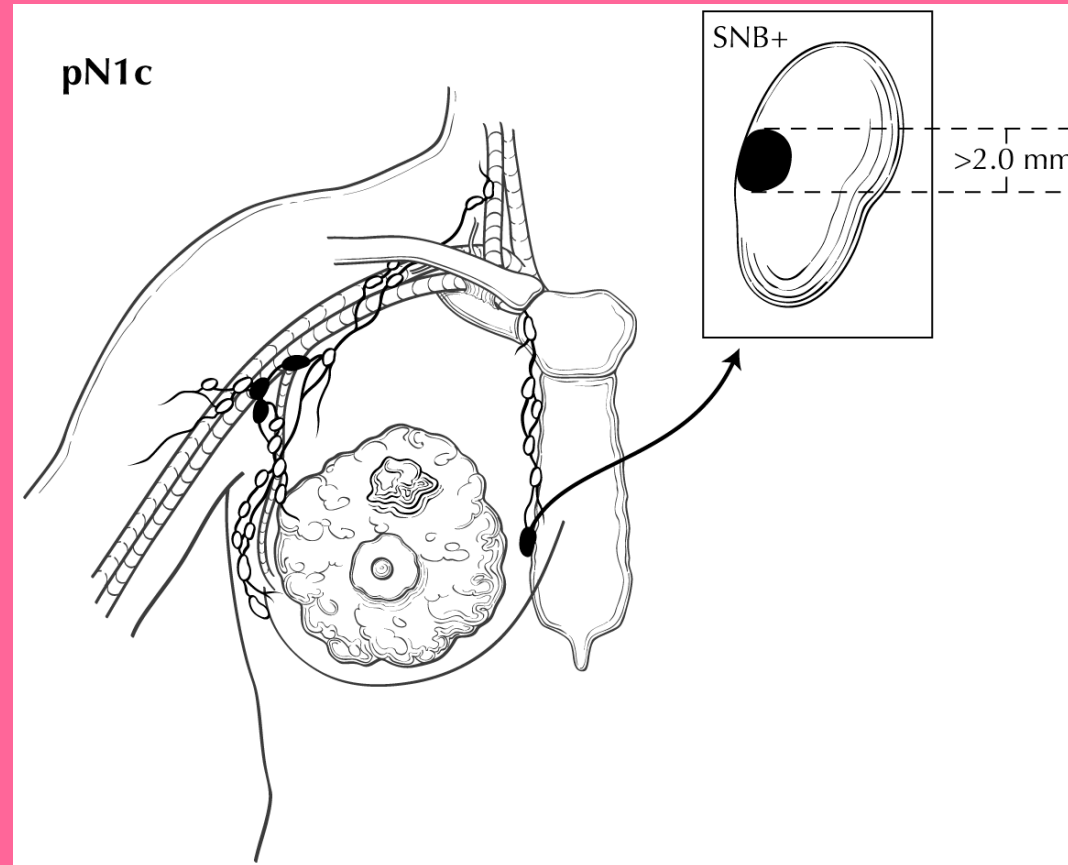
- **N1b** Metastases in internal mammary nodes with micrometastases or macrometastases detected by sentinel LN BX but NOT “clinically detected”
- **N1c** Metastases in 1 to 3 axillary LNs and internal mammary LNs with micrometastases or macrometastases detected by sentinel LN BX but NOT “clinically apparent”

# Breast



pN1b metastases in internal mammary nodes detected by sentinel lymph node biopsy but not clinically detected.

# Breast



pN1c illustrating 3 positive axillary lymph nodes and metastases in internal mammary lymph nodes detected by sentinel lymph node biopsy but not clinically detected.

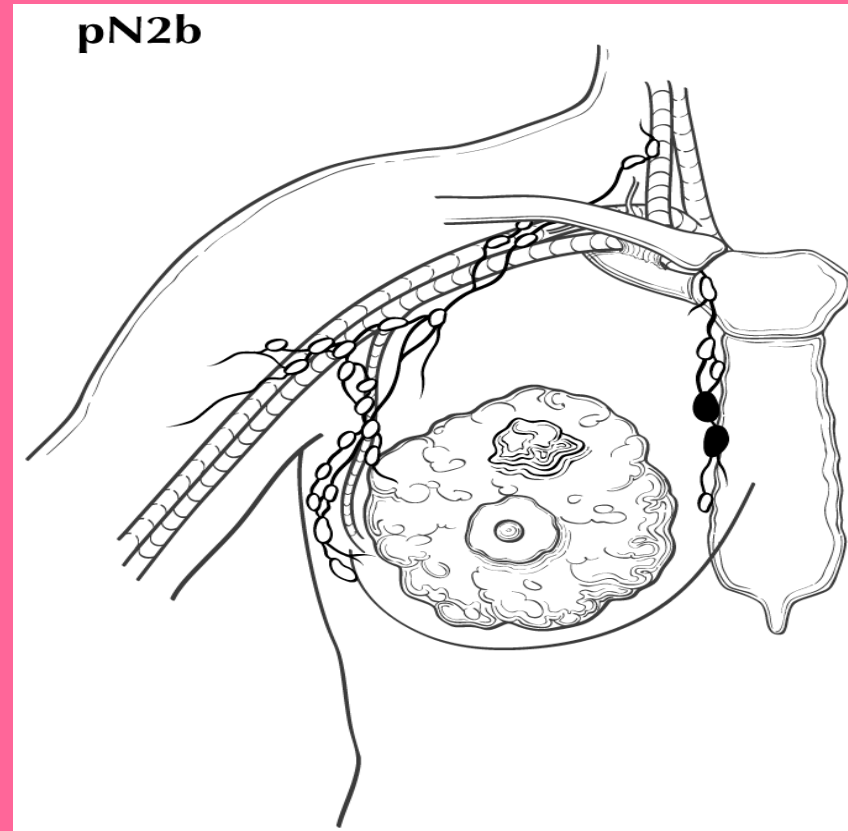


# AJCC Pathologic N classifications

- **N2a** Metastases in 4 to 9 axillary lymph nodes (at least one tumor deposit greater than 2.0 mm)
- **N2b** Metastases in clinically detected internal mammary lymph nodes in the ABSENCE of axillary lymph node metastases



# Breast

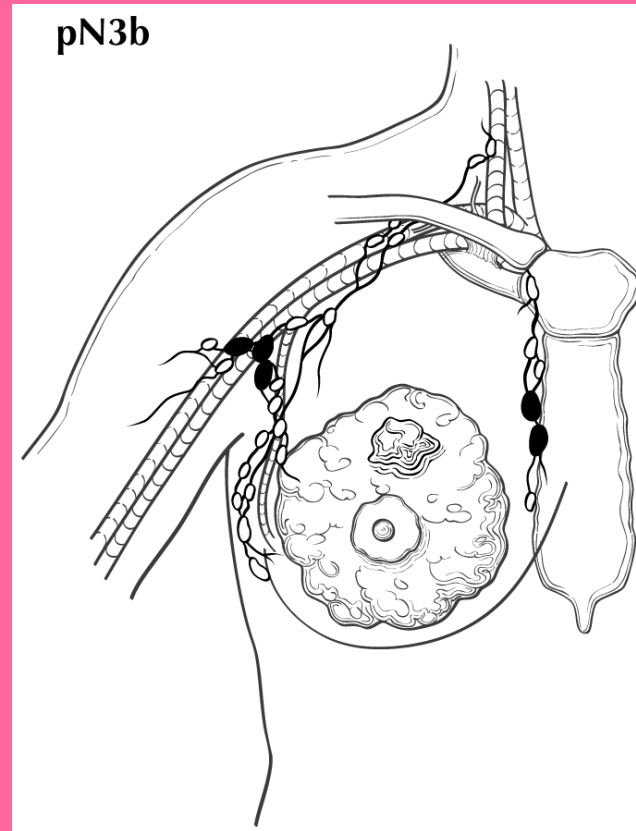


pN2b illustrating metastases in clinically detected internal mammary nodes with no axillary lymph node involvement.

# AJCC Pathologic N classifications

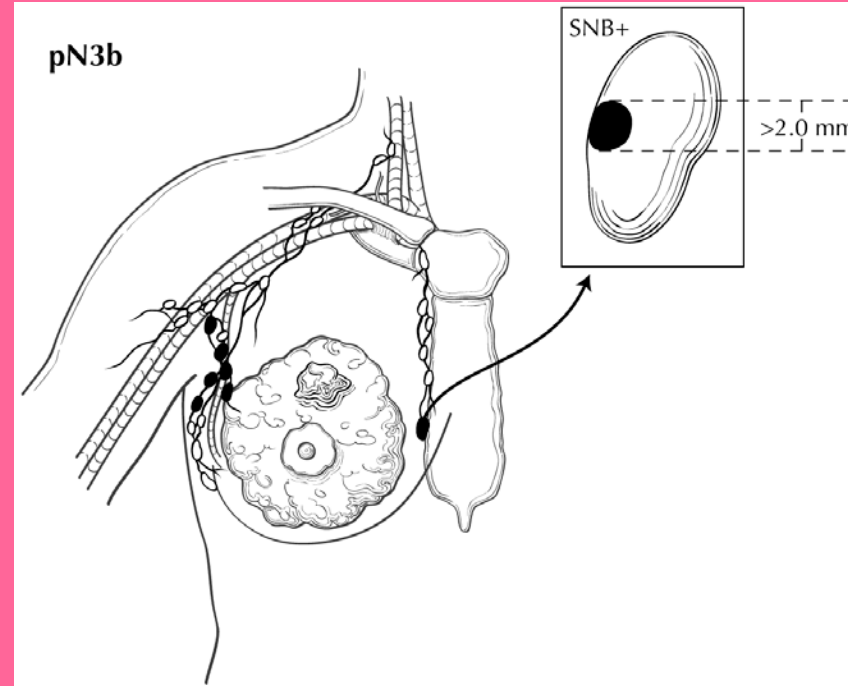
- **N3a** Metastases in 10 or more axillary lymph nodes (at least one tumor deposit greater than 2.0 mm), OR metastases to the infraclavicular (level III axillary) lymph nodes
- **N3b** Metastases in clinically detected ipsilateral internal mammary LNs in the presence of 1 or more positive axillary LNs, OR in more than 3 axillary LNs and in internal mammary LNs with micrometastases or macrometastases detected by sentinel LND but NOT "clinically apparent"
- **N3c** Metastases to ipsilateral supraclavicular lymph nodes

# Breast



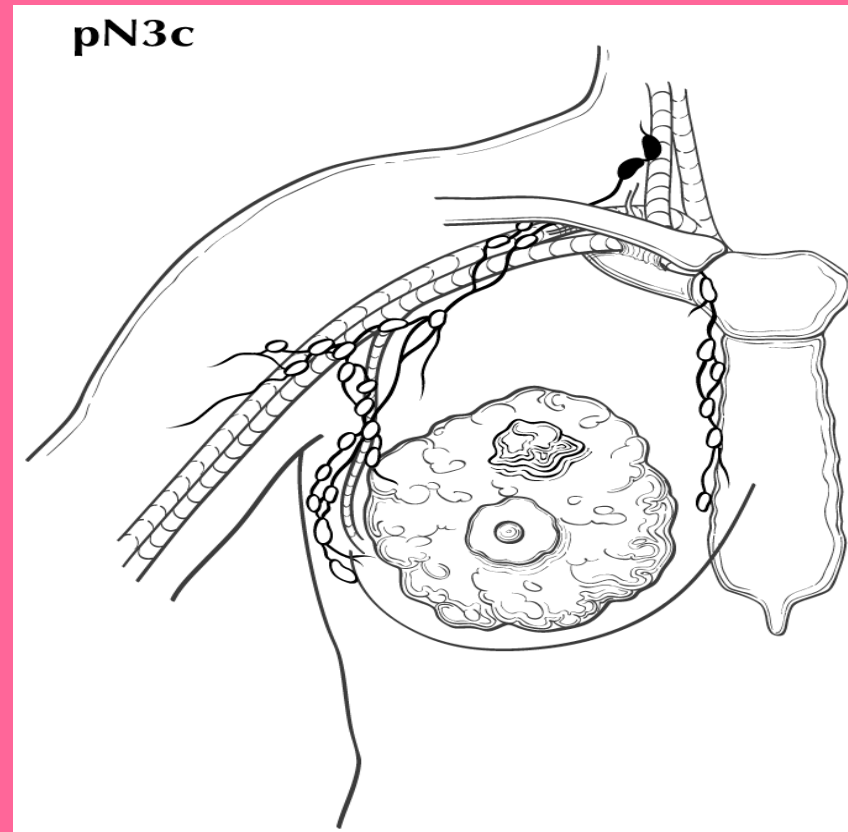
pN3b illustrated as metastases in clinically detected internal mammary nodes in the presence of 3 positive axillary lymph nodes.

# Breast



pN3b illustrated as metastases in 6 positive axillary lymph nodes and in one internal mammary lymph node with micrometastases or macrometastases detected by sentinel lymph node biopsy but not clinically detected.

# Breast



pN3c illustrated as metastases in ipsilateral supraclavicular lymph nodes.

# AJCC M classifications

- **M0** No distant metastasis
- **M0(i+)** No clinical or radiographic evidence of distant metastases, but deposits of molecularly or microscopically detected tumor cells in circulating blood, bone marrow, or other non regional nodal tissue that are no larger than 0.2mm in a patient without symptoms or signs of metastases
- **M1** Distant metastasis

## BREAST ANATOMIC STAGE/PROGNOSTIC GROUPS

Stage 0	Tis	N0	M0
Stage IA	T1	N0	M0
Stage IB	T0	N1Mi	M0
	T1	N1Mi	M0
Stage IIA	T0	N1	M0
	T1	N1	M0
	T2	N0	M0
Stage IIB	T2	N1	M0
	T3	N0	M0
Stage IIIA	T0	N2	M0
	T1	N2	M0
	T2	N2	M0
	T3	N1/N2	M0
Stage IIIB	T4	N0/N2	M0
Stage IIIC	Any T	N3	M0
Stage IV	Any T	Any N	M1

# AJCC Staging for Breast Cases

- For clinical staging to apply, there must be a suspicion of cancer.
- For pathologic staging to apply you must meet one of the following criteria:
  1. Surgical resection per AJCC Breast chapter including lumpectomy, simple/total mastectomy, modified radical mastectomy
  2. Biopsy of highest T category PLUS biopsy of highest N category. (T4/N3 proven).
  3. Positive histologic confirmation of a metastatic site. (M1 proven).



# Clinical Staging for Breast Cases

- Physical Exam (primary tumor characteristics, eval of axilla)
- Imaging (mammogram, ultrasound, MRI, PET, CT scans)
- FNA of regional Lymph nodes
- Sentinel LN BX without removal of primary tumor

# BREAST CASE EXAMPLE

- 40 year old female presents with a self-discovered left breast mass. PE: 1.5 cm left UOQ breast mass. No skin changes or axillary LNs identified. Mammogram/US showed 1.6 cm left UOQ mass. No skin thickening seen. No abnormal axillary LNs. Stereotactic BX performed with path stating Invasive Ductal Carcinoma. PT opted for a total mastectomy. Path: Invasive Ductal carcinoma, 1.7 cm with no associated in-situ component. SLN BX was negative.

# BREAST CASE EXAMPLE

○ Does our case meet eligibility for clinical staging ?

**YES**

*There is a diagnosis of breast cancer so clinical staging must be completed.*

# BREAST CASE EXAMPLE

- What is our clinical T classification?

**cT1c**

What is this based on ?

Mammogram/US showing 1.6 cm tumor confined to breast.

# BREAST CASE EXAMPLE

- What is our clinical N classification?

**cN0**

What is this based on ?

Mammogram/US and PE all stated no axillary LNs identified.

# BREAST CASE EXAMPLE

- What is our clinical M classification?

**cM0**

What is this based on ?

Based on H&P with no signs or symptoms of METS present.

# BREAST CASE EXAMPLE

- What is our clinical staging?

**cT1c**

**cN0**

**cM0**

**cStage IA**

# BREAST CASE EXAMPLE

- Does our case meet eligibility for pathologic staging ?

**YES**

*There has been surgical resection of the primary tumor.*



# BREAST CASE EXAMPLE

- What is our pathologic T classification?

**pT1c**

What is this based on ?

Pathology report showing a 1.7 cm tumor confined to the breast.

# BREAST CASE EXAMPLE

- What is our pathologic N classification?

**pN0**

What is this based on ?

SLNs were removed for evaluation and were benign per path.

# BREAST CASE EXAMPLE

- What is our pathologic M classification?

**cM0**

What is this based on ?

No signs or symptoms of METS per H&P.

# BREAST CASE EXAMPLE

- What is our pathologic staging?

**pT1c**

**pN0**

**cM0**

**pStage IA**


# REMINDER:

## When can you bring down cN0 to pN field ?

There are 6 scenarios in which you can bring down cN0 to pN field if case has met eligibility for pathologic staging.

1. In-situ/non-invasive of any site
2. Melanoma Stage IA
3. GIST
4. Bone
5. Soft Tissue Sarcoma
6. Endometrium

# Interactive Breast TNM staging

- It's time to put you to work...
- One side is Yellow = which indicates either "No" or "Disagree" = **X**
- One side is Pink = which indicates "YES" or "Agree" = 

# Interactive Breast TNM staging

- 63 year old female with an abnormal mammogram showing calcifications in the upper right breast. Biopsy was performed showing DCIS. Lumpectomy performed with path showing DCIS. No LNs removed for evaluation.

# Interactive Breast TNM staging

○ Does our case meet eligibility for clinical staging ?



**YES** Cancer has been diagnosed so clinical staging must be completed



# Interactive Breast TNM staging

Based on the information given what is the clinical T classification ?

Answer ?

cTis DCIS per Biopsy

Do you agree ?

**X** pTis (7<sup>th</sup> edition AJCC)

**NOTE: For 8<sup>th</sup> Edition AJCC this will be cTis.**

# Interactive Breast TNM staging

Based on the information given what is the clinical N classification ?

Answer ?

cN0 (DCIS)

Do you agree ?



# Interactive Breast TNM staging

Based on the information given what is the clinical M classification ?

Answer ?

cM0 (DCIS)

Do you agree ?



# Interactive Breast TNM staging

Based on the information what would the clinical staging be ?

Answer

pTis

cN0

cM0

cStage 0



# Interactive Breast TNM staging

Based on the information given does the case meet criteria to be pathologically staged ?

Answer ?



(A lumpectomy performed, surgical resection of the primary)

# Interactive Breast TNM staging

Based on the information given what is the pathologic T classification ?

Answer ?

pTis (DCIS)

Do you agree ?



# Interactive Breast TNM staging

Based on the information given what is the pathologic N classification ?

Answer ?

pN0

Do you agree ?

**X** cN0 (No nodes were removed and examined; per AJCC: LNs do not have to be evaluated for in-situ/non-invasive cancers)

# Interactive Breast TNM staging

Based on the information given what is the clinical M classification ?

Answer ?

cM0

Do you agree ?





# Interactive Breast TNM staging

Based on the information what would the pathologic staging be ?

Answer

pTis

cN0

cM0

pStage 0



# Interactive Breast TNM staging

- Let's take a look at the Anatomic Stage/Prognostic Groups for Breast (page 362 in AJCC 7<sup>th</sup> Edition Manual, large book)

Can we assign a stage group for TxN3cM0 ?

Answer



Stage III C (since all T classifications T1-T4 are included, It is the N3 that is making this a Stage III C).

## BREAST ANATOMIC STAGE/PROGNOSTIC GROUPS

Stage 0	Tis	N0	M0
Stage IA	T1	N0	M0
Stage IB	T0	N1Mi	M0
	T1	N1Mi	M0
Stage IIA	T0	N1	M0
	T1	N1	M0
	T2	N0	M0
Stage IIB	T2	N1	M0
	T3	N0	M0
Stage IIIA	T0	N2	M0
	T1	N2	M0
	T2	N2	M0
	T3	N1/N2	M0
Stage IIIB	T4	N0/N2	M0
<b>Stage IIIC</b>	<b>Any T</b>	<b>N3</b>	<b>M0</b>
Stage IV	Any T	Any N	M1

# Breast Example #1

60 year old female presents to PCP for left breast pain and skin changes.

PE: Left breast shows **diffuse skin thickening and edema consistent with inflammatory breast cancer. Matted axillary LNs** also evident.

**Skin BX** performed in office revealed **invasive ductal carcinoma involving the dermis.**

**FNA of left axilla showed metastatic** carcinoma.



MRI performed showing diffuse skin thickening with an underlying **8 cm mass** involving all quadrants of the left breast. **Abnormal axillary LNs** also identified.

Neoadjuvant treatment initiated.

PE after chemo showed resolution of clinical symptoms.

**Left modified radical mastectomy** performed with path showing residual invasive ductal carcinoma **3 cm in size** with no in-situ component seen. **3 of 17 axillary LNs** were positive.

# Breast Example #1

- Does clinical staging apply ? 
- What info can be used ? Clinical exam (PE), MRI, FNA of Axillary LNs)
- Does pathologic staging apply ? 
- Why ? There was surgical resection of the primary.

# Breast Example #1

- cStaging: cT4d (inflammatory carcinoma per PE)
  - cN2a (matted axillary LNs per PE and imaging)
  - cM0 (no signs or symptoms of METS)
  - cStage IIIB
- pStaging: ypT2 (3 cm per path)
  - ypN1a (3 positive LNs per path)
  - cM0 (no signs or symptoms of METS)
  - ypStage IIIA



## Breast Example #2

- 51 year old female with an abnormal mammogram showing a right central breast mass measuring **2.8 cm**. Abnormal **axillary LNs identified** consistent with local METS. There was also a **right supraclavicular LN** suspicious which a **FNA was performed showing METS Lobular carcinoma**. PET scan performed showing **lung and bone METS**. PT refused all treatment and opted for Hospice.

# Breast Example #2

- Does clinical staging apply ? 
- What info can be used ? Mammogram, FNA of regional LNs, PET)
- Does pathologic staging apply ?

**X**

- Why ? There was no surgical resection of the primary, no BX of the highest T with the highest N category and no confirmation of METS.



# Where do I find MD AJCC TNM Staging in MY EMR ?

- Facility specific AJCC TNM documentation policies
- Staging Forms ?
- Documentation of clinical TNM in H&P, OP report, D/C summary
- Documentation of clinical TNM in MD/Surgeon office notes
- Nurse Navigation Forms
- Cancer Conference/Tumor Board documentation

**DOCUMENT ALL STAGING IN YOUR TEXT!**

# Summary

- You must be familiar with AJCC Staging manual and site specific chapter rules.
- Review your medical record/info available closely to assign **clinical** and **pathologic** staging if case meets eligibility.
- NOTE: If your staging **doesn't match** MD staging and will change the treatment planned, you should discuss with your physicians directly.
- Document in your text what your physician has staged and what you are staging. \*EXAMPLE: Dr. Little staged cStage IV in office note dated 1/1/17. CTR stages cT1c (1.5 cm per MRI), N2 (clinically matted axillary LNs per PE), cM1 (bone MET per PET) cStage IV. pStaging = n/a.

# Questions



# Contact Information

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