

## Breast 2021 Case Scenarios

### Case #1 Basic

06/23/2020 Screening mammogram: Left breast with indeterminate calcifications with associated symmetry noted in the upper inner quadrant.

08/18/2020 Left diagnostic mammogram and ultrasound: Low-density mass with circumscribed borders persist in the central and superior left breast at anterior depth. Ultrasound confirms a complex cystic/solid mass with internal vascularity at 11-12:00 1 x 0.5 x 0.9 cm. No other abnormalities.

09/17/2020 MRI breast – Left breast with an irregular enhancing mass 1.1 x 1.2 cm involving the UIQ of the left breast. No nodes noted.

10/07/2020: Left breast core biopsy: Invasive ductal carcinoma, Nottingham Grade 2, 0.2 cm in largest linear extent, DCIS intermediate nuclear grade, micropapillary and solid with focal comedonecrosis and microcalcifications.

ER+ 95% 3+, PR+ 20% 3+, HER-2 by IHC Negative (1+), Ki-67 approx. 30%.

Patient was counseled on treatment recommendations including surgery to include lumpectomy versus mastectomy. Patient chose left breast simple mastectomy with a prophylactic right breast mastectomy.

01/14/2021 Left breast simple mastectomy, left sentinel lymph node mapping and biopsy, right prophylactic simple mastectomy, both sides with immediate tissue expander placement.

Pathology: Right breast benign.

Left breast – invasive ductal carcinoma, Nottingham grade 1, 1.1 cm in largest dimension. DCIS compromising approximately 70% of the tumor volume, no LVI, all margins are negative. Left axillary sentinel lymph nodes – 3 excised, all negative, confirmed on immunostains.

Oncotype score 12

No role for radiation – clear margins, node negative

No role for adjuvant chemotherapy – Oncotype 12

Patient will require adjuvant endocrine therapy for 5 years (began Arimidex 02/15/2021).

Case 1 Answer sheet

Primary Site	<b>C50.2 (M3)</b>	Grade Clinical	2
Histology	8500 (H8, H14)	Grade Pathological	2
Behavior	3	Grade Post Therapy	
<b>Stage Data items</b>			
<i>Clinical Tumor Size</i>	012	<i>Pathological Tumor Size</i>	011
		<i>Tumor Size Summary</i>	011
<b>AJCC Stage</b>			
Clinical T	cT1c	Pathological T	pT1c
cT Suffix		pT Suffix	
Clinical N	cN0	Pathological N	pN0
cN Suffix		pN Suffix	(sn)
Clinical M	cM0	Pathological M	cM0
Clinical Stage	1A	Pathological Stage	1A
<i>Grade 2 Her 2 - ER + PR +</i>		<i>Grade 2 Her 2 - ER + PR +</i>	
Summary Stage 2018		1-Localized	
<i>EOD Primary Tumor</i>		100 (any size confined to breast)	
<i>EOD Lymph Regional Nodes</i>		070	
<i>EOD Mets</i>		00	
Sentinel Lymph Nodes Positive		00	
Sentinel Lymph Nodes Examined		03	
Regional Nodes Positive		00	
Regional Nodes Examined		03	
Lymphovascular Invasion		0	
<b>SSDI's</b>			
Lymph Nodes Positive Axillary Level I-II		00	
ER Summary		1	
ER Percent Positive		095	

ER Allred Score	08
PR Summary	1
PR Percent Positive	020
PR Allred Score	06
HER2 Overall Summary	0
Ki-67 (MIB-1)	30.0
Oncotype DX Recur Score	12
Oncotype Dx Risk Level Invasive	0
Response Neoadjuvant Therapy	0
<b>Dx Staging and Treatment</b>	
Diagnostic Staging Procedure	02
Surgery of Primary Site	49
Scope of Regional Lymph Nodes	2
Surgical Procedure/Other Site	0

## Case #2 Multiple Tumors

A 67-year-old female self-palpated a lump in the UOQ of the right breast and presented her to primary care physician on 02/15/2021. The PCP performed an exam and noted large pendulous breasts and confirmed a 2.5 cm lesion in the UOQ, no abnormalities in the axillae. A diagnostic mammogram was ordered that identified a 2.1 cm lesion at 10:00 and a 3.2 cm lesion at 11:00, there were also a few indeterminate right axillary nodes. No abnormalities were noted in the left breast.

Biopsies were performed on 03/01/2021 and revealed the following:

10:00 lesion – Invasive ductal carcinoma with apocrine metaplasia, Nottingham grade 1 (ER 92% 3+, PR 79% 2+, HER-2 by IHC 0 negative).

11:00 lesion – Invasive pleomorphic carcinoma, Nottingham grade 2 (ER 50% 2+, PR 65% 2+, HER-2 by IHC 0 negative). Ki-67 16%

The patient was offered breast conserving surgery (since the lesions were close) followed by radiation versus mastectomy. Additional treatment recommendations will be based on surgical findings.

The patient decided to have breast conserving surgery.

03/25/2021 SAVI localized right breast lumpectomy, right sentinel lymph node biopsy, reverse right arm lymph node mapping and bilateral breast oncoplastic reduction.

Right breast – multifocal breast carcinoma – 1.8 cm Invasive ductal carcinoma Nottingham grade 2, biopsy clip in specimen; 2.9 cm invasive pleomorphic carcinoma, Nottingham grade 2, no LVI, focal ADH present, margins clear, no extension of tumor to the dermis, 0/2 sentinel lymph nodes.

Oncotype score 9

Per national treatment guidelines – if the patient chooses breast conservation surgery, then surgery should be followed by radiation.

The patient received 45 Gy in 25 fractions (6x 10x, 3D conformal) to the breast followed by a boost to the lumpectomy bed of 5 fractions (6x 10x, 3D conformal), total of 10 Gy.

As the patient is ER and PR positive, the patient is counseled regarding hormone therapy and she agreed – 5 years. Arimidex

### Points to make during this case:

STR (single primary)

Use the (m) T suffix.

What tumor markers do you use.

Calculating Allred scores

SAVI lumpectomy not the same thing as SAVI radiation

Oncoplastic reduction – what it is and how is the surgery coded

### Case 2 Answer sheet

Primary Site	<b>C50.4</b>	Grade Clinical	2		
Histology	8500 (M13 H26)	Grade Pathological	2		
Behavior	/3	Grade Post Therapy			
<b>Stage Data items</b>					
<i>Clinical Tumor Size</i>	032	<i>Pathological Tumor Size</i>	029	<i>Tumor Size Summary</i>	029
<b>AJCC Stage</b>					
Clinical T	cT2	Pathological T	pT2		
cT Suffix	(m)	pT Suffix	(m)		
Clinical N	cN0	Pathological N	pN0		
cN Suffix		pN Suffix	(sn)		
Clinical M	cM0	Pathological M	cM0		
Clinical Stage	1B	Pathological Stage	1A		
<i>Grade 2 Her 2 - ER + PR +</i>		<i>Grade 2 Her 2 - ER + PR +</i>			
Summary Stage 2018		1-Localized			
<i>EOD Primary Tumor</i>		100 (any size confined to breast)			
<i>EOD Lymph Regional Nodes</i>		070			
<i>EOD Mets</i>		00			
Sentinel Lymph Nodes Positive		00			
Sentinel Lymph Nodes Examined		02			
Regional Nodes Positive		00			
Regional Nodes Examined		02			
Lymphovascular Invasion		0			
<b>SSDI's</b>					
Lymph Nodes Positive Axillary Level I-II		00			
ER Summary		1			
ER Percent Positive		050			
ER Allred Score		06			

PR Summary	1
PR Percent Positive	065
PR Allred Score	06
HER2 Overall Summary	0
Ki-67 (MIB-1)	16.0
Oncotype DX Recur Score	9
Oncotype Dx Risk Level Invasive	0
Response Neoadjuvant Therapy	0
<b>Dx Staging and Treatment</b>	
Diagnostic Staging Procedure	02
Surgery of Primary Site	22
Scope of Regional Lymph Nodes	2
Surgical Procedure/Other Site	0

<b>Radiation</b>			
<b>Phases</b>	<b>I</b>	<b>II</b>	<b>III</b>
Primary Treatment Volume	40	41	
Draining Lymph Nodes	00	00	
Treatment Modality	02	02	
External Beam Planning Technique	04	04	
Dose Per Fraction (cGy)	00180	00200	
Number of Fractions	025	005	
Total Dose (cGy)	004500	001000	
Date RT Started	00/00/0000		
Date RT Ended	00/00/0000		
# of Phases of RT to this Volume	02		
RT Discontinued Early	00		
Total Dose	005500		

### Case #3-No primary tumor identified

A 52-year-old female presents with swelling in the left axilla. Her PCP noted a 3.1 cm mass in the left axilla on PE that was fixed. Left axillary ultrasound identified a left axillary node 3 cm, and 2 additional nonspecific nodes 1.1 and 0.9 cm. Additionally, diagnostic mammogram was ordered and identified no suspicious breast findings.

FNA was performed of the enlarged left axillary node (11/13/2020) and revealed a metastatic poorly differentiated breast carcinoma, ER (-) 0%, PR (-) 0%, HER2 IHC (-) 1+, KI-67 76%.

PET SCAN – 3.2 cm avid mass in the left axilla, no obvious source of left axillary cancer. No distant mets identified.

The patient was recommended to undergo Carboplatin and Paclitaxel (weekly x12 weeks) followed by DDAC (dose dense Adriamycin and Cytosan every 2 weeks x4 cycles) as neoadjuvant systemic therapy.

Following systemic therapy: MRI breasts – Oval mass (24 x 14 x 22 mm) in the inferior left axilla is known malignancy, decreased in size compared to the prior study indicating partial response to treatment. Adjacent level 1 axillary nodes are prominent. Surgical management of the known malignancy is recommended.

Operative report: Left complete axillary dissection with reverse arm mapping. (the reverse arm mapping is a procedure performed to try and preserve multiple lymphatic channels to decrease the possible lymphedema resulting from the surgery. The right arm was infiltrated with isosulfan blue dye to clearly map the lymphatic channels).

0/8 nodes removed in one specimen. Therapy change and biopsy clip are identified in the largest node, another node shows focal fibrosis, suggestive of therapy change. Additional 0/8 left axillary nodes (total of 16 nodes removed).

Discussion with the patient regarding diagnosis, prognosis and treatment options. Recommend a course of radiation to the whole left breast with inclusion of the regional nodes.

The patient was recommended to have radiation, which she completed:

Left breast and nodes, 50 Gy, 25 fractions, Modality x6 to x15, 3D conformal

Patient does not require any further systemic therapy. Discussed with the patient taking low-dose tamoxifen 10 mg po every other day as chemoprevention for breast cancer.

Points to make during this case:

Using the (f) suffix for N

Using the ER, PR, HER2 and Ki-67 and grade from the node tissue because there was no evidence of primary tumor.

YC/YP staging-

Giving tamoxifen for chemoprevention even in ER/PR negative patients.

Case 3 Answer sheet								
Primary Site	<b>C50.9</b>		Grade Clinical	3				
Histology	8500 (M1, H14)		Grade Pathological	9				
			yc Grade					
Behavior	/3		yp Grade					
Stage Data items								
Clinical Tumor Size		000	Pathological Tumor Size		999	Tumor Size Summary		000
AJCC Stage								
cT	cT0	pT		ycT	ycT0	ypT		
cT Suffix		pT Suffix		ycT Suffix		ypT Suffix		



cN	cN2a	pN		yc N	ycN0	ypN	
cN Suffix	(f)	pN Suffix		ycN Suffix		ypN Suffix	
cM	cM0	pM		ycM	cM0	ypM	
cStage	3C	pStage	99 Blank	ycStage	88	ypStage	
<i>Grade 3 Her 2 - ER - PR -</i>		<i>Grade Her 2 ER PR</i>					

<b>Summary Stage 2018</b>		<b>3 Regional to Lymph Nodes</b>	
<i>EOD Primary Tumor</i>		800	
<i>EOD Lymph Regional Nodes</i>		350	
<i>EOD Mets</i>		00	
Sentinel Lymph Nodes Positive		98	
Sentinel Lymph Nodes Examined		00	
Regional Nodes Positive		95	
Regional Nodes Examined		16	
Lymphovascular Invasion		9	
<b>SSDI's</b>			
Lymph Nodes Positive Axillary Level I-II		X6	
ER Summary		0	
ER Percent Positive		000	
ER Allred Score		00	
PR Summary		0	
PR Percent Positive		000	
PR Allred Score		00	
HER2 Overall Summary		0	
Ki-67 (MIB-1)		76	
Oncotype DX Recur Score		9	
Oncotype Dx Risk Level Invasive		XX9	
Response Neoadjuvant Therapy		9	
<b>Dx Staging and Treatment</b>			
Diagnostic Staging Procedure		00	

Surgery of Primary Site	00		
Scope of Regional Lymph Nodes	5		
Surgical Procedure/Other Site	0		
<b>Radiation</b>			
<b>Phases</b>	<b>I</b>	<b>II</b>	<b>III</b>
Primary Treatment Volume	40		
Draining Lymph Nodes	04		
Treatment Modality	02		
External Beam Planning Technique	04		
Dose Per Fraction (cGy)	00200		
Number of Fractions	025		
Total Dose (cGy)	005000		
Date RT Started	03/08/21		
Date RT Ended	04/09/21		
# of Phases of RT to this Volume	01		
RT Discontinued Early	01		
Total Dose	005000		

## Case #4 Breast Case with a Vaccine Trial

09/19/2020 screening mammogram - right breast - 10:00 position 10 CMFN (Centimeters From Nipple) is a solid mass 1.9 x 1.8 x 1.6 cm, correlates with palpable finding. Nodules in right axilla favor suspicious adenopathy.

10/09/2020 right mammogram - 10:00 10 cmfn 1.9 cm new palpable suspicious solid mass with ipsilateral axillary tail suspicious adenopathy.

10/22/2020 - right breast 10:00 mass needle core biopsy - invasive ductal carcinoma, Nottingham grade 2

ER 0% negative

PR 0% negative

Her-2/neu by IHC 3 positive

Ki-67 30% high

Right axillary LN fna – metastatic carcinoma

11/20/2020 PET imaging - metabolically active disease in the right breast and right axilla correlates with the histologically confirmed neoplasm.

11/23/2020 MRI breast - left breast with no abnormalities. Right breast - irregular lobulated mass in the posterior right uoq (10:00) corresponding to biopsy proven malignancy 2.8 x 2.1 x 2.1 cm, 6 CMFN. Multiple enlarged right axillary nodes are noted at level 1, largest measuring 2.6 cm and likely corresponding to biopsy proven metastatic node per history. Abnormal appearing nodes are also present at level 2 (3 cm node).

01/07/2021 59-year-old female who began noticing discharge/flaking from the right nipple in late 2019/early 2020. Eventually sought care and had a biopsy showing a right breast invasive ductal carcinoma with multiple enlarged axillary nodes. PE today identifies a 4 cm mass in the right lateral breast with easily palpable axillary adenopathy. Clinically a T2 N1 M0 stage 2 breast cancer. Recommend neoadjuvant TCH-P.

### **Pilot study utilizing her-2 directed dendritic cell vaccine during neoadjuvant therapy of her2+ breast cancer.**

Vaccine given for 3 weeks followed by TCH-P. Booster intranodal study vaccine at week 25 near the date of surgery, then 3 booster intranodal study vaccines given once every 6 months (the first is to occur 6 months from 1 month after surgery)

01/15/2021 (LN) and 01/19/2021 (Breast) vaccine

01/22/2021 (LN) and 01/25/2021 (Breast) vaccine

01/29/2021 (LN) and 02/01/2021 (Breast) vaccine

02/04/2021 – 05/20/2021 6 cycles of carboplatin, docetaxel, trastuzumab and pertuzumab

06/11/2021 – Ongoing trastuzumab and pertuzumab (because she is HER-2 positive this will continue for 12-18 months)

06/21/2021 right modified radical mastectomy, left prophylactic mastectomy. Immediate right axillary lymphatic reconstruction. Right axillary dissection.

06/21/2021 right breast mastectomy - residual invasive and in situ ductal carcinoma s/p neoadjuvant chemotherapy, invasive tumor 1.8 cm with 10% cellularity, tumor bed 3 cm. LVI indeterminate, margins not involved, mets in 3/29 right axillary nodes, additional nodes with isolated tumor cells, largest mets 0.75 cm, no ENE. Two additional right axillary nodes found both negative.

Points to be made with this case:

How to code a clinical trial – how to find information about the trial

YC/YP staging

Lymphatic reconstruction surgery

Case 4 Answer sheet

Primary Site	<b>C50.4</b>	Grade Clinical	2
Histology	8500	Grade Pathological	9
		yc Grade	
Behavior	/3	yp Grade	9

**Stage Data items**

<i>Clinical Tumor Size</i>	028	<i>Pathological Tumor Size</i>	999	Tumor Size Summary	028
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**AJCC Stage**

cT	cT2	pT		ycT		ypT	ypT1c
cT Suffix		pT Suffix		ycT Suffix		ypT Suffix	
cN	cN1	pN		yc N		ypN	ypN1a
cN Suffix	(f)	pN Suffix		ycN Suffix		ypN Suffix	
cM	cM0	pM		ycM		ypM	cM0
cStage	2B	pStage	99-Blank	ycStage		ypStage	88

*Grade 2 Her 2 + ER - PR -*      *Grade Her 2 ER PR*

Summary Stage 2018	3-Regional Lymph Node
<i>EOD Primary Tumor</i>	100
<i>EOD Lymph Regional Nodes</i>	150
<i>EOD Mets</i>	00
Sentinel Lymph Nodes Positive	98
Sentinel Lymph Nodes Examined	00
Regional Nodes Positive	03
Regional Nodes Examined	31
Lymphovascular Invasion	9
<b>SSDI's</b>	
Lymph Nodes Positive Axillary Level I-II	03
ER Summary	0
ER Percent Positive	000
ER Allred Score	00
PR Summary	0

PR Percent Positive	000
PR Allred Score	00
HER2 Overall Summary	1
Ki-67 (MIB-1)	30.0
Oncotype DX Recur Score	XX9
Oncotype Dx Risk Level Invasive	9
Response Neoadjuvant Therapy	9
<b>Dx Staging and Treatment</b>	
Diagnostic Staging Procedure	02
Surgery of Primary Site	52
Scope of Regional Lymph Nodes	5
Surgical Procedure/Other Site	0
<b>Systemic</b>	
Chemotherapy	03
Hormone	00
BRM/Immunotherapy	01
Systemic/Surgery Sequence	4 (before and after surgery)
<b>Other</b>	
Other	00

Radiology Key

<https://radiologykey.com/breast-mass/>