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		Grade Clinical			
Histology		Grade Pathological			
Behavior		Grade Post Therapy			
Stage Data items					
Clinical Tumor Size		*Pathological Tumor Size*		Tumor Size Summary	
AJCC Stage					
Clinical T		Pathological T			
cT Suffix		pT Suffix			
Clinical N		Pathological N			
cN Suffix		pN Suffix			
Clinical M		Pathological M			
Clinical Stage		Pathological Stage			
Grade Her 2 ER PR		*Grade Her 2 ER PR Oncotype*			

Summary Stage 2018	
EOD Primary Tumor	
EOD Lymph Regional Nodes	
EOD Mets	
Sentinel Lymph Nodes Positive	
Sentinel Lymph Nodes Examined	
Regional Nodes Positive	
Regional Nodes Examined	
Lymphovascular Invasion	
SSDI's	
Lymph Nodes Positive Axillary Level I-II	
ER Summary	
ER Percent Positive	
ER Allred Score	

PR Summary	
PR Percent Positive	
PR Allred Score	
HER2 Overall Summary	
Ki-67 (MIB-1)	
Oncotype DX Recur Score	
Oncotype Dx Risk Level Invasive	
Response Neoadjuvant Therapy	
Dx Staging and Treatment	
Diagnostic Staging Procedure	
Surgery of Primary Site	
Scope of Regional Lymph Nodes	
Surgical Procedure/Other Site	

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

Case 2 Answer sheet

Primary Site		Grade Clinical			
Histology		Grade Pathological			
Behavior		Grade Post Therapy			
Stage Data items					
Clinical Tumor Size		*Pathological Tumor Size*		Tumor Size Summary	
AJCC Stage					
Clinical T		Pathological T			
cT Suffix		pT Suffix			
Clinical N		Pathological N			
cN Suffix		pN Suffix			
Clinical M		Pathological M			
Clinical Stage		Pathological Stage			
Grade Her 2 ER PR		*Grade Her 2 ER PR Oncotype*			

Summary Stage 2018	
EOD Primary Tumor	
EOD Lymph Regional Nodes	
EOD Mets	
Sentinel Lymph Nodes Positive	
Sentinel Lymph Nodes Examined	
Regional Nodes Positive	
Regional Nodes Examined	
Lymphovascular Invasion	
SSDI's	
Lymph Nodes Positive Axillary Level I-II	
ER Summary	
ER Percent Positive	
ER Allred Score	
PR Summary	

PR Percent Positive	
PR Allred Score	
HER2 Overall Summary	
Ki-67 (MIB-1)	
Oncotype DX Recur Score	
Oncotype Dx Risk Level Invasive	
Response Neoadjuvant Therapy	
Dx Staging and Treatment	
Diagnostic Staging Procedure	
Surgery of Primary Site	
Scope of Regional Lymph Nodes	
Surgical Procedure/Other Site	

Radiation			
Phases	**I**	**II**	**III**
Primary Treatment Volume			
Draining Lymph Nodes			
Treatment Modality			
External Beam Planning Technique			
Dose Per Fraction (cGy)			
Number of Fractions			
Total Dose (cGy)			
Date RT Started			
Date RT Ended			
# of Phases of RT to this Volume			
RT Discontinued Early			
Total Dose			

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 Cytoxan 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.

Radiology Key

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

Case 3 Answer sheet

Primary Site		Grade Clinical	
Histology		Grade Pathological	
		yc Grade	
Behavior		yp Grade	

Stage Data items

Clinical Tumor Size		*Pathological Tumor Size*		Tumor Size Summary	

AJCC Stage

cT		pT		ycT		ypT	
cT Suffix		pT Suffix		ycT Suffix		ypT Suffix	
cN		pN		yc N		ypN	
cN Suffix		pN Suffix		ycN Suffix		ypN Suffix	
cM		pM		ycM		ypM	
cStage		pStage		ycStage		ypStage	
Grade Her 2 ER PR		*Grade Her 2 ER PR*					

Summary Stage 2018	
EOD Primary Tumor	
EOD Lymph Regional Nodes	
EOD Mets	
Sentinel Lymph Nodes Positive	
Sentinel Lymph Nodes Examined	
Regional Nodes Positive	
Regional Nodes Examined	
Lymphovascular Invasion	

SSDI's

Lymph Nodes Positive Axillary Level I-II	
ER Summary	
ER Percent Positive	
ER Allred Score	
PR Summary	

PR Percent Positive	
PR Allred Score	
HER2 Overall Summary	
Ki-67 (MIB-1)	
Oncotype DX Recur Score	
Oncotype Dx Risk Level Invasive	
Response Neoadjuvant Therapy	
Dx Staging and Treatment	
Diagnostic Staging Procedure	
Surgery of Primary Site	
Scope of Regional Lymph Nodes	
Surgical Procedure/Other Site	

Radiation			
Phases	**I**	**II**	**III**
Primary Treatment Volume			
Draining Lymph Nodes			
Treatment Modality			
External Beam Planning Technique			
Dose Per Fraction (cGy)			
Number of Fractions			
Total Dose (cGy)			
Date RT Started			
Date RT Ended			
# of Phases of RT to this Volume			
RT Discontinued Early			
Total Dose			

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.

Case 4 Answer sheet

Primary Site		Grade Clinical	
Histology		Grade Pathological	
		yc Grade	
Behavior		yp Grade	

Stage Data items

Clinical Tumor Size		*Pathological Tumor Size*		Tumor Size Summary	

AJCC Stage

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cN		pN		yc N		ypN	
cN Suffix		pN Suffix		ycN Suffix		ypN Suffix	
cM		pM		ycM		ypM	
cStage		pStage		ycStage		ypStage	

Grade Her 2 ER PR	*Grade Her 2 ER PR*
Summary Stage 2018	
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Oncotype DX Recur Score	
Oncotype Dx Risk Level Invasive	
Response Neoadjuvant Therapy	
Dx Staging and Treatment	
Diagnostic Staging Procedure	
Surgery of Primary Site	
Scope of Regional Lymph Nodes	
Surgical Procedure/Other Site	
Systemic	
Chemotherapy	
Hormone	
BRM/Immunotherapy	
Systemic/Surgery Sequence	
Other	