BREAST PATHOLOGY GROSSING GUIDELINES

THINGS TO CONSIDER:

A. Please review ALL imaging and pathology (including outside reports, operative and oncology notes) PRIOR to grossing any breast case.
    a. It may be helpful to create a diagram to assist when grossing
B. Faxitron all mastectomy specimens:
    a. Place into Faxitron with **POSTERIOR** surface down, and **SUPERIOR** at the top of the screen
    b. Make sure the clip location(s) correlates with imaging
    c. Annotate properly (for identification and orientation) and document that a Faxitron image was taken in the gross description
C. Evaluate the mass/lesion size after sectioning: correlate with the o'clock location in the clinical and imaging findings and association with clip
D. Multiple masses/lesions/clips: Document the distance between them in your gross description.
E. If an axillary tail is present, determine the reason for this (e.g., axillary lymph node dissection as part of a modified radical mastectomy, upper outer orientation for a simple mastectomy, or axillary tail primary tumor site) and ink appropriately.
F. Nipple sections: If a lesion is near the nipple, take a perpendicular section of nipple to lesion. Otherwise amputate, serially section longitudinal to the lactiferous ducts, and take a nipple base shave section.
G. Cassette summary should be descriptive enough to correlate gross sampling with microscopic/clinical/imaging findings.
    a. Document level and location of your sections (examples):
        i. Level 1- superior OR level 1- upper inner quadrant
        ii. Level 13- tissue between lesion #1 (1:00 ribbon-shaped clip) and lesion #2 (3:00 barrel-shaped clip)
        iii. Level 4- lesion #3 closest to posterior margin
        iv. Level 2- lesion #1 closest to superior margin
H. Breast tissue sections should be thin, no larger than a standard postage stamp size, and have as little fatty tissue as possible (focusing on fibrous tissue) to optimize fixation and histology
    a. There should be space around the tissue on all sides so that tissue is not touching the sides of the cassette.
    b. Tissue should be around 3mm in thickness and failure to submit appropriately sized sections could result in cassettes needing to be reprocessed and delaying the case
    c. All breast cassettes should be submitted for the 8-hour processor to ensure proper processing and fixation

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FORMALIN FIXATION

Due to CAP-recommended guidelines for ER and HER2/neu (including FISH) testing, specimens should be placed in formalin within one hour after the time of surgery or biopsy (collection time). Furthermore, the breast tissue should be in contact with formalin for at least 6 hours, not to exceed 72 hours.

Note: The exception to this is when the requisition states 'Rule out Lymphoma' or a prior core needle biopsy diagnosis was reported as lymphoma. In these cases, an assessment for a lymphoma work-up should be made (for potential flow cytometric studies or B5 fixation) before placing the breast tissue in 10% NBF.

Specimen collection time: The OR staff records the collection time of breast specimens in Beaker and contacts SurgPath personnel to pick up specimens in a timely fashion.

Ischemic time: Breast excisions/re-excisions/lumpectomies/partial mastectomies and all mastectomies (including prophylactic ones) are to be **immediately** (within 1 hour) weighed and placed in 10% neutral buffered formalin (NBF) once received or picked up from the OR. Ideally, this task will be performed by the personnel/technician prior to accessioning the case. The time the specimen was placed in 10% NBF will be written on the specimen container and documented in Case Notes in Beaker. The collection time and the time the specimen has been placed in 10% NBF will be used to calculate ischemic time:

(Time tissue placed in formalin [documented in case notes]) – (Collection time) = Ischemic Time

When a specimen comes in late on Friday: Gross the specimen such that you identify the tumor and submit sections of the tumor for the Friday 8-hour processor. If the specimen is still very fresh, then please submit the remaining sections (including lymph nodes) during the weekend such that they'll run on the Sunday processor.

As always, RECORD THE ISCHEMIC TIME **AND** THE FORMALIN FIXATION TIME

For long weekends/holiday schedule: All breast main specimens should be prioritized and grossed in before long weekends. Tissue should be submitted for the 8-hour processor for the same day, or the next available 8-hour process per the holiday schedule without going over 72 hours of total fixation.

Note that you may need to place tissue in alcohol if there is risk of over-fixation. You should review this with a PA and/or pathologist beforehand.

Calculating formalin fixation times

Monday – Friday	calculate fixation time until 12am
Sunday	calculate fixation time until 8pm on Sunday

BREAST PATHOLOGY GROSSING GUIDELINES

Specimen Type: MASTECTOMY

Procedure:

1. Review ALL relevant history (imaging, prior pathology, operative, and oncology notes including outside reports) to correlate with gross findings
2. Weigh (fresh weight should be written on specimen container)
3. Orient specimen (typically- long-lateral; short-superior)
    a. Quadrants will be determined based on location of nipple
4. Measure (entire specimen, skin ellipse, nipple, and axillary tail if present)
    a. Provide oriented dimensions of breast (ANT-POST; MED-LAT; SUP-INF)
5. Check skin for scar, puckering or ulcerations
6. Document if nipple is everted, inverted, or retracted
7. Faxitron (prior to inking) and look for microclip(s) and calcifications
    a. Place breast with POSTERIOR surface down in the Faxitron
    b. Include "A Faxitron image is taken to reveal…"
    c. Document clips, clip shape, o'clock orientation, distance from nipple of clip, and obvious calcifications in your gross description
8. Ink specimen:

Blue- superior	Purple-medial
Green- inferior	Yellow- lateral
Orange- anterior/superficial	Black- posterior/deep

    **If nipple sparing- ink sub-areolar disc with red ink
9. Nipple sectioning:
    a. If lesion is close to nipple, take a perpendicular section of nipple to lesion.
    b. If lesion is NOT close to nipple, amputate the nipple, serially section the amputated nipple, and take a shave of the nipple base.
10. Serially section into 1cm or thinner levels from medial to lateral
    a. Document number of levels
    b. Document nipple level
11. Characterize lesion(s):
    a. Indicate size, location (quadrant and o'clock orientation), and associated clips
    b. Give distance to all margins, nipple
    c. If multiple lesions, give the distance between the lesions/biopsy sites and distance between the farthest ends of the lesion (in case the grossly separate lesions are one large lesion)
12. If an axillary lymph node dissection is attached to the breast as part of a <u>modified radical mastectomy</u> procedure, separate, palpate and section through the dissection for lymph nodes (try to find 10-20 LN at minimum)
    a. If oriented (typically one suture- level 1; two sutures-level 2) cut into two levels and document in cassette summary
    b. Document any biopsy clips and corresponding LN in cassette summary

c. Even if no axillary tail is present, try and palpate for lymph nodes, especially in the upper outer quadrant

Suggested breast sections for histology:

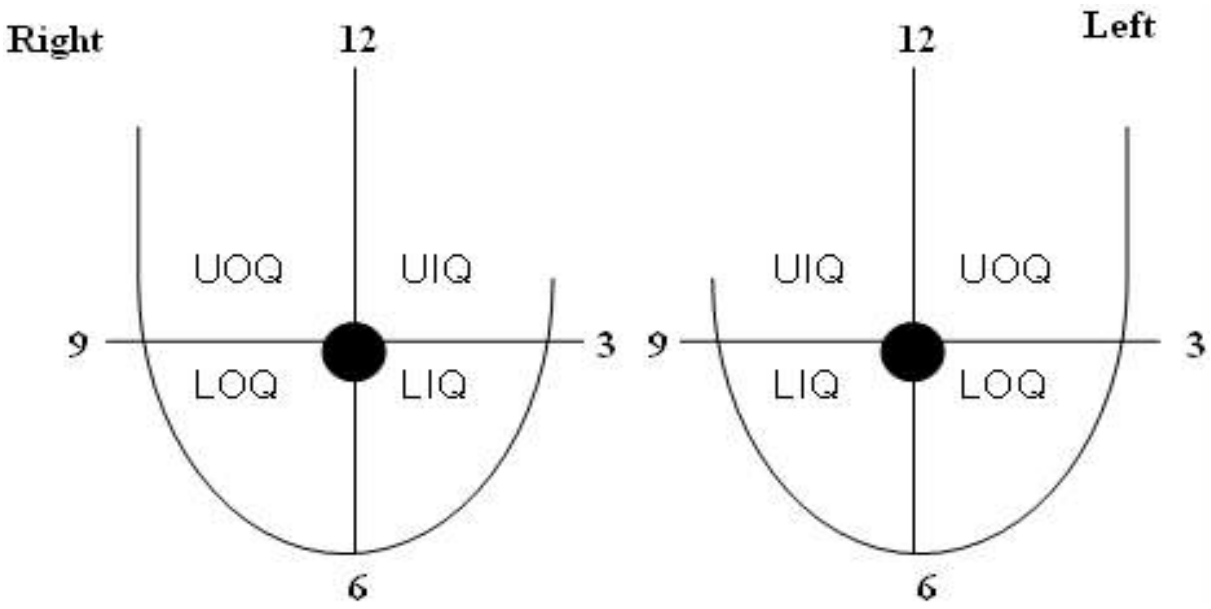
- **Prophylactic**	▪ Nipple and lymph nodes as described above ▪ Sample clip areas, all clinically detected lesions, all grossly detected lesions ▪ Additional 2 cassettes per quadrant, focusing on fibrous breast parenchymal tissue and/or calcs
- **BRCA or CHEK2 mutations** **(NO lesions or biopsies)**	▪ Nipple and lymph nodes as described above ▪ Additional 2 cassettes per quadrant, focusing on fibrous tissue and/or calcs
- **DCIS** - **ADH** - **LCIS**	▪ Nipple and lymph nodes as described above ▪ Extent of DCIS: reporting SIZE of DCIS is important. - Sample biopsy site(s) (you may not see a gross lesion) - Sample based on imaging extent of disease (e.g., MRI NME or mammographic distribution of calcifications) - Sample grossly suspicious areas: DCIS often looks pinker than surrounding fibrous tissue - Include close margins - Sample tissue between biopsy sites, if applicable ▪ Two flank levels before and & after the biopsy site(s) or anticipated extent of disease ▪ Additional 1 cassette per quadrant, focusing on fibrous tissue and/or calcs

BREAST PATHOLOGY GROSSING GUIDELINES

- **IDC** - **IDC with DCIS** - **ILC**	▪ Nipple and lymph nodes as described above ▪ Invasive carcinoma: Entire lesion (or every level if >4-6 sections) - Include close margins - Include area of biopsy site/clip - Sample tissue between lesions, if applicable - Relationship to skin overlying lesion to include scar, if possible ▪ One flank level before and & after lesion ▪ Extent of DCIS: important to document especially if extensive. See DCIS section for guidelines ▪ Additional 1 cassette per quadrant, focusing on fibrous tissue and/or calcs
- **Multicentric Lesions**	▪ Nipple and lymph nodes as described above ▪ Invasive carcinoma: Entire lesions (or every level if >4-6 sections) - Include close margins - Include area of biopsy site/clip - Sample tissue between lesions - Relationship to skin overlying lesion to include scar, if possible ▪ One flank level before and & after each lesion ▪ Extent of DCIS: see DCIS section for guidelines ▪ Additional 1 cassette per quadrant, focusing on fibrous tissue and/or calcs
- **Post neo-adjuvant chemotherapy (NACT)**	▪ Nipple and lymph nodes as described above ▪ Measure possible tumor bed in 3 dimensions ▪ **Entirely embed tumor bed (15 cassettes or fewer) OR if too large, submit 2 sections per 1 cm of tumor bed:** - Include close margins - Include area of biopsy site/clip, if applicable - Relationship to skin overlying lesion to include scar, if possible ▪ One flank level before and & after the tumor bed ▪ Additional 1 cassette per quadrant, focusing on fibrous tissue and/or calcs
- **Prior lumpectomy cavity**	▪ Nipple and lymph nodes as described above ▪ Correlate with prior path, clinical and imaging, and sample close or positive margins - Include mass lesions, calcs, and/or biopsy site/clip, if applicable - Relationship to skin overlying lesion to include scar, if possible - Minimum 1 cassette per cm (largest dimension of cavity) Additional 1 cassette per quadrant, focusing on fibrous tissue and/or calcs

BREAST PATHOLOGY GROSSING GUIDELINES

Gross Template:



MMODAL COMMAND: "INSERT SKIN SPARING MASTECTOMY"
It consists of a [*weight in grams****] g, oriented mastectomy specimen with sutures indicating [*describe orientation/short -superior****]. The specimen measures [***] cm (medial - lateral) x [***] cm (superior-inferior) x [***] cm (anterior - posterior). There [*is/is no***] axillary tail present. A Faxitron image is taken to reveal [*comment on calcifications and presence/absence of biopsy clip(s)****].

The specimen is serially sectioned from medial to lateral into [***] levels. The retro areolar area is located in level [***]. Sectioning reveals a [*describe lesion/ill-defined area of fibrous tissue in three dimensions****]. The [*lesion/fibrous area*] is located in levels [***]. A [*indicate shape of clip****] clip is identified in level [indicate level and if inside/outside of mass***]. The lesion measures [***] cm from anterior, [***] cm from posterior, [***] cm from medial, [***] cm from lateral, [***] cm from superior, [***] cm from inferior, and [***] cm from the [*retro areolar/nipple****].

The remainder of the uninvolved parenchyma consists of [*give percentage****] white-tan fibrous tissue and [*give percentage****] yellow-tan adipose tissue. The lateral aspect is palpated and [*number of lymph nodes/no****] lymph nodes are identified.

[*All identified lymph nodes are submitted in their entirety and representative sections of the remaining specimen are submitted/ The lesion is entirely submitted and representative sections of the remaining specimen are submitted/ Representative sections are submitted****].*

Total Ischemic Time: [*time in formalin minus collection time****] minutes
Total Formalin fixation Time: [*collection time to 12 am Monday-Friday****] hours

INK KEY:

Blue	Superior
Green	Inferior
Purple	Medial
Yellow	Lateral
Orange	Anterior
Black	Deep
Red	Subareolar

[*insert cassette summary****]

BREAST PATHOLOGY GROSSING GUIDELINES

MMODAL COMMAND: "INSERT MASTECTOMY"

It consists of a [*weight in grams****] g, oriented mastectomy specimen with sutures indicating [*describe orientation/short -superior****]. The specimen measures [***] cm (medial - lateral) x [***] cm (superior-inferior) x [***] cm (anterior - posterior). There [*is a/is no****] skin ellipse present on the anterior surface. The skin ellipse measures [*give measurement in two dimensions****] cm. The [*everted/inverted/flattened****] nipple measures [*give measurement in three dimensions****] cm. There [*is/is no***] axillary tail present. A Faxitron image is taken to reveal [*comment on calcifications and presence/absence of biopsy clip(s)****].

The specimen is serially sectioned from medial to lateral into [***] levels. The nipple is located in level [***]. Sectioning reveals a [*describe lesion/ill-defined area of fibrous tissue in three dimensions****]. The [*lesion/fibrous area*] is located in levels [***]. A [*indicate shape of clip****] clip is identified in level [indicate level and if inside/outside of mass***]. The lesion measures [***] cm from anterior/skin surface, [***] cm from posterior, [***] cm from medial, [***] cm from lateral, [***] cm from superior, [***] cm from inferior, and [***] cm from the nipple.

The remainder of the uninvolved parenchyma consists of [*give percentage****] white-tan fibrous tissue and [*give percentage****] yellow-tan adipose tissue. The lateral aspect is palpated and [*number of lymph nodes/no****] lymph nodes are identified.

[*All identified lymph nodes are submitted in their entirety and representative sections of the remaining specimen are submitted/ The lesion is entirely submitted and representative sections of the remaining specimen are submitted/ Representative sections are submitted****].

Total Ischemic Time: [*time in formalin minus collection time****] minutes
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INK KEY:

Blue	Superior
Green	Inferior
Purple	Medial
Yellow	Lateral
Orange	Anterior
Black	Deep

[*insert cassette summary****]

Sample Cassette Submission: Generally, you should submit around **10-20 cassettes.**

Case with biopsy proven invasive carcinoma

A1 Nipple, serially sectioned
A2 Nipple base, shave
A3 Medial flank of mass, level 3
A4 Mass with ribbon-shaped clip at 3:00, in relation to closest margin (anterior), level 4
A5 Mass to superior, level 5
A6 Mass to inferior, level 5
A7 Mass to posterior, level 6
A8 Lateral flank of mass, level 7
A9 Upper outer quadrant- unremarkable parenchyma, level 2
A10 Upper inner quadrant- unremarkable parenchyma, level 5
A11 Lower outer quadrant- unremarkable parenchyma, level 11
A12 Lower inner quadrant- unremarkable parenchyma, level 14