

Handling of Complex Breast Specimens including Post NACT and Oncoplastic Procedures



**ELENA PROVENZANO
ADDENBROOKES HOSPITAL
CAMBRIDGE, U.K.**

Breast Surgery



New age of breast surgery – less is more

- Avoid axillary dissection
- Avoid mastectomy where possible:
 - NACT to downsize large tumours and permit conservation
 - Oncoplastic procedures for large tumours and multifocal disease
 - Central resections for Paget's and retroareolar lesions
- Skin sparing mastectomies with nipple preservation

Neoadjuvant Chemotherapy



- Indications:
- Management of locally advanced invasive breast cancers including inflammatory breast cancer
- ‘Down-staging’ of large inoperable cancers to permit surgical resection
- Routine management of women with high risk disease who would require adjuvant chemotherapy based on biological tumour characteristics and clinical-radiological findings
- Now being driven by the surgeons

Specimen Handling Post NACT



- Thorough macroscopic (gross) assessment of the specimen critical for accurate classification of pCR
- A multidisciplinary approach with adequate clinical information and access to imaging results is essential
- Close clinical/ radiological correlation to map the precise location of the tumour bed is preferable to exhaustive blind sampling
- Placement of a marker clip at the time of diagnosis is very helpful in the event of an excellent response to treatment

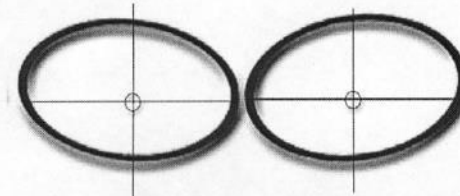
Specimen Handling

Minimum information required:

- Clear indication neoadjuvant Rx has been given and it's nature
- Location of tumour/s within the breast – diagram best
- Pre treatment size on imaging
- Is the patient on a clinical trial – may be requirement for tissue banking as part of protocol

Pathology Form to accompany Breast Specimen

Neo-IAngo (Neoadjuvant Paclitaxel, Anthracycline, Gemcitabine & Cyclophosphamide)



R L

Date of Surgery:

Coil Placed Yes/No

Addressograph

AT PRESENTATION/DIAGNOSIS

Unifocal Multi focal

Lesion 1 Size Lesion 2 Size Lesion 3 Size

Tumour Site

OUQ	L1	L2	L3
OLQ			
IUQ			
ILQ			
Central Area			

PRE-SURGERY

Unifocal Multi focal

Lesion 1 Size Lesion 2 Size Lesion 3 Size

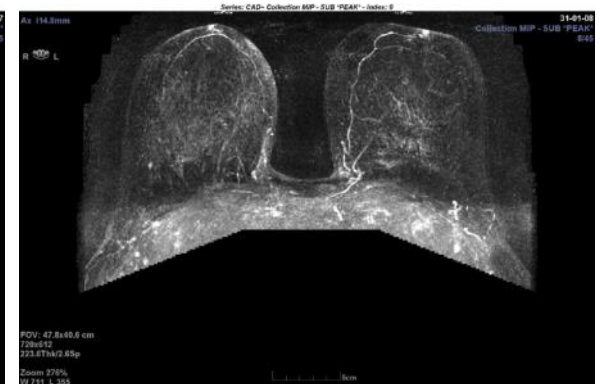
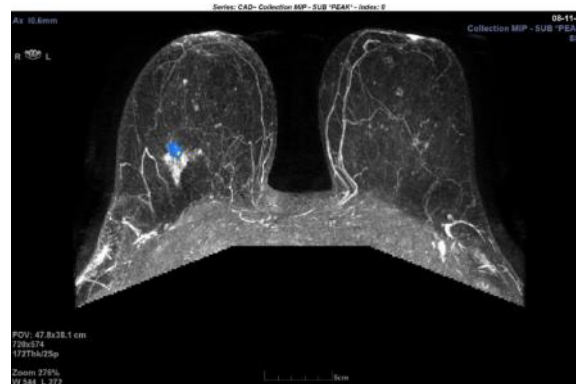
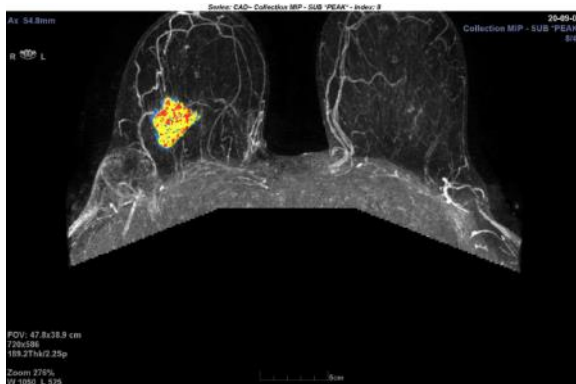
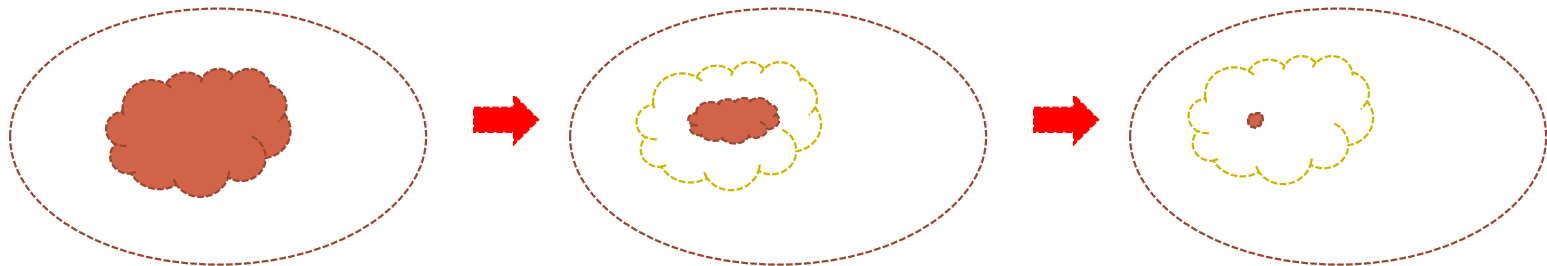
Tumour Site

OUQ	L1	L2	L3
OLQ			
IUQ			
ILQ			
Central Area			

Patterns of tumour response



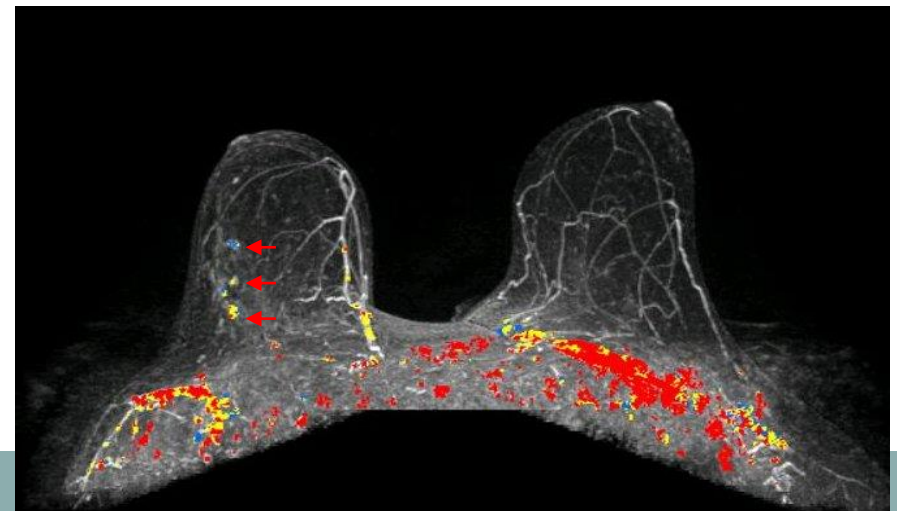
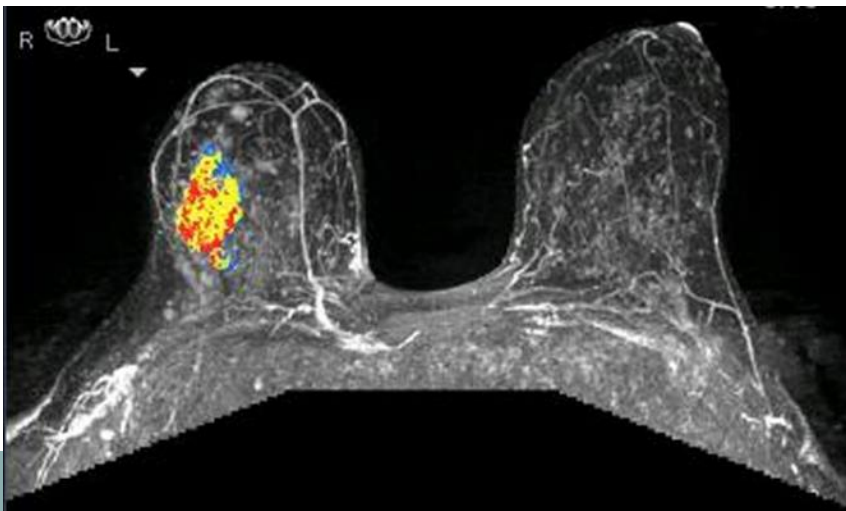
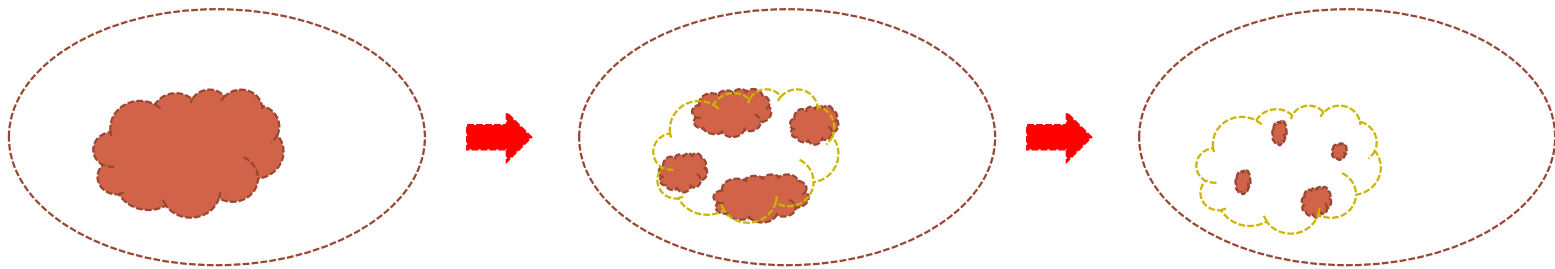
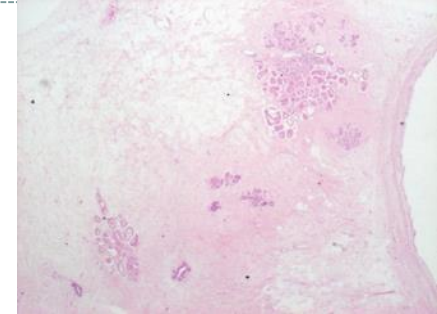
A. Concentric shrinking



Patterns of tumour response



B. Scatter pattern



Specimen Handling



- Specimen should be sent fresh to the histopathology laboratory as quickly as possible for slicing to aid fixation – good fixation is critical for accurate assessment.
- Always remember the minimum dataset
 - Lesion size
 - Margins
 - Evaluation of response

Specimen Handling



- BIG-NABCG Residual Disease Working Group
- Systematic sampling of areas identified by intelligent mapping and close clinical-pathological correlation is more important than overly exhaustive sampling
- Specimen divided into 1-2 cm thick slices
- Full face section of tumour bed taken from each slice up to a **maximum** of 25 blocks should be sufficient to document pCR
- Five blocks representing the maximum full face dimension of the tumour bed adequate for assessment of cellularity to calculate the RCB
- Additional blocks required if tumour bed not identified
- Large tissue cassettes can be very useful and make assessment of cellularity and lesion size easier

1

2

3

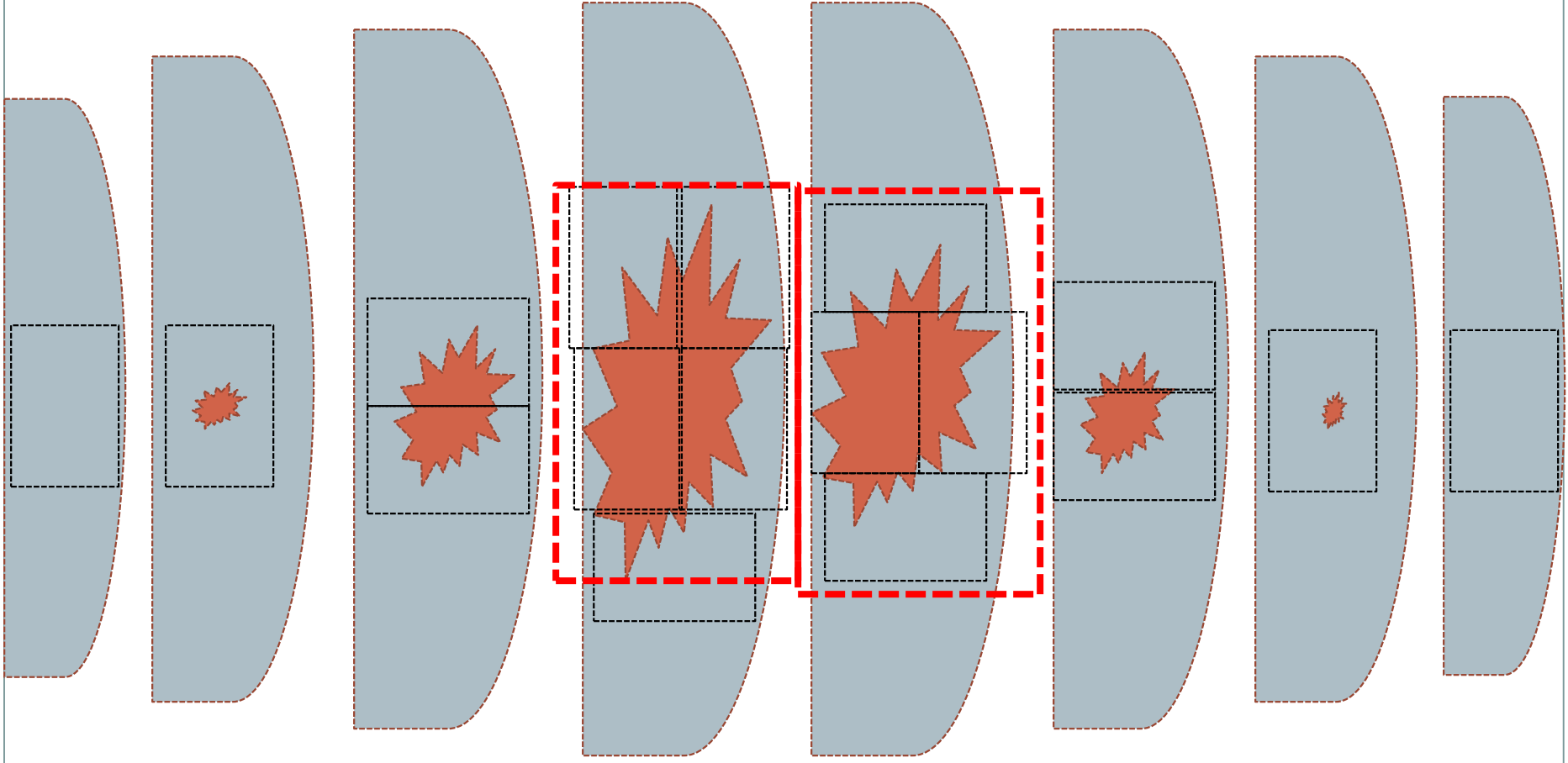
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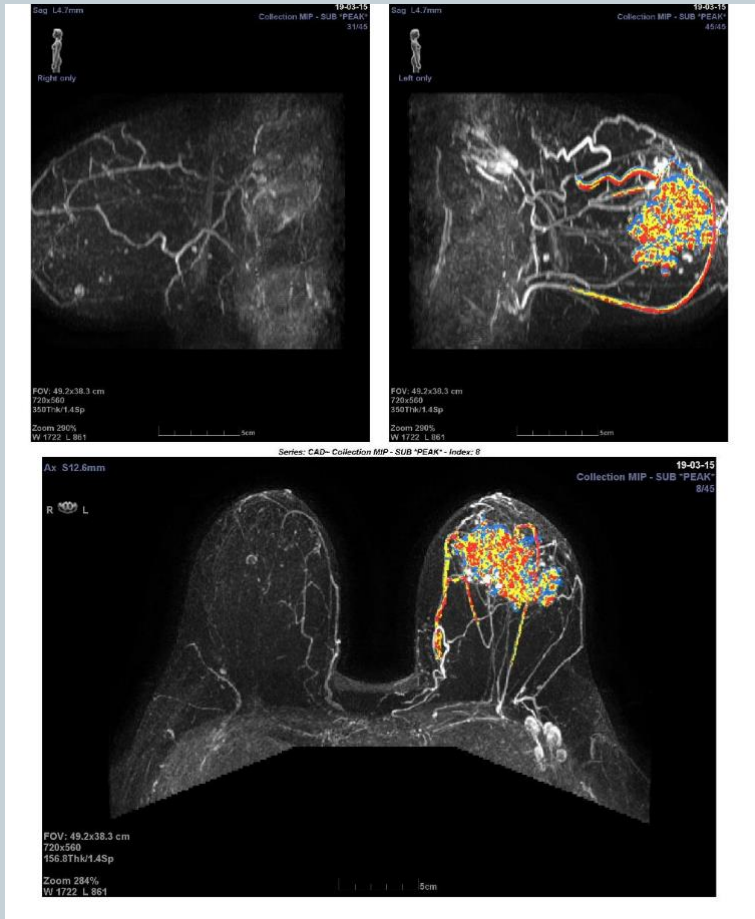
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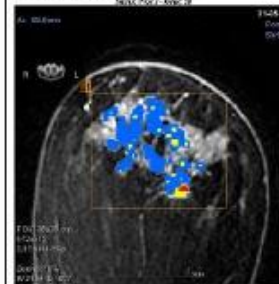
MRI – Pre and Post



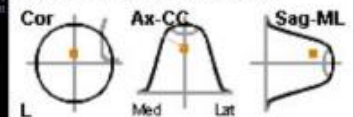
LEFT BREAST

1 Finding, Summary Angio Volume 14.9 cc

Finding L1



L, UO, 12 o'clock, anterior



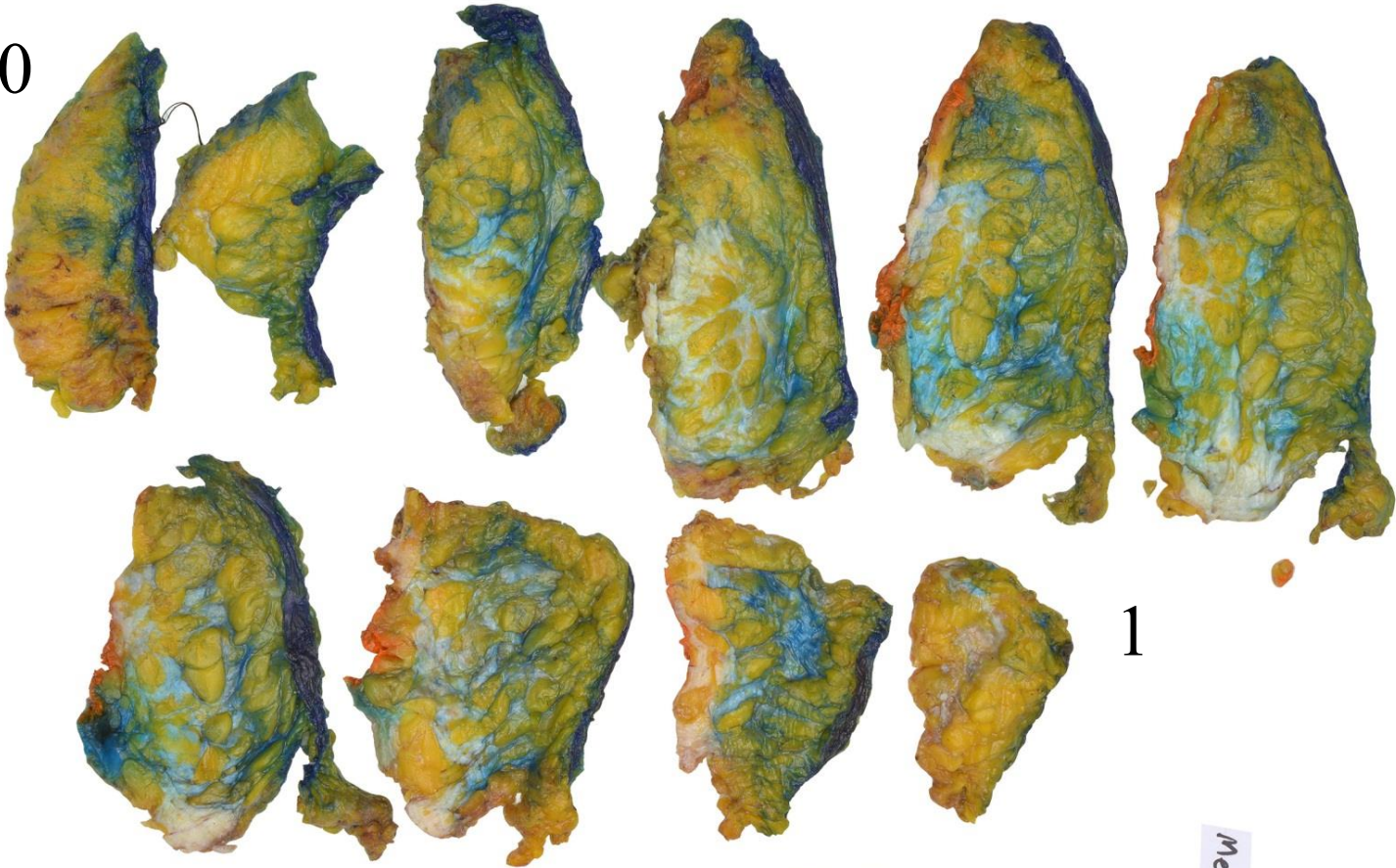
Diameters: 4.7 x 2.8 x 4.9 cm
Angio Volume: 14.9 cc

Mastectomy



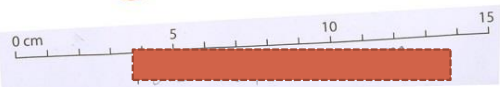
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Lateral

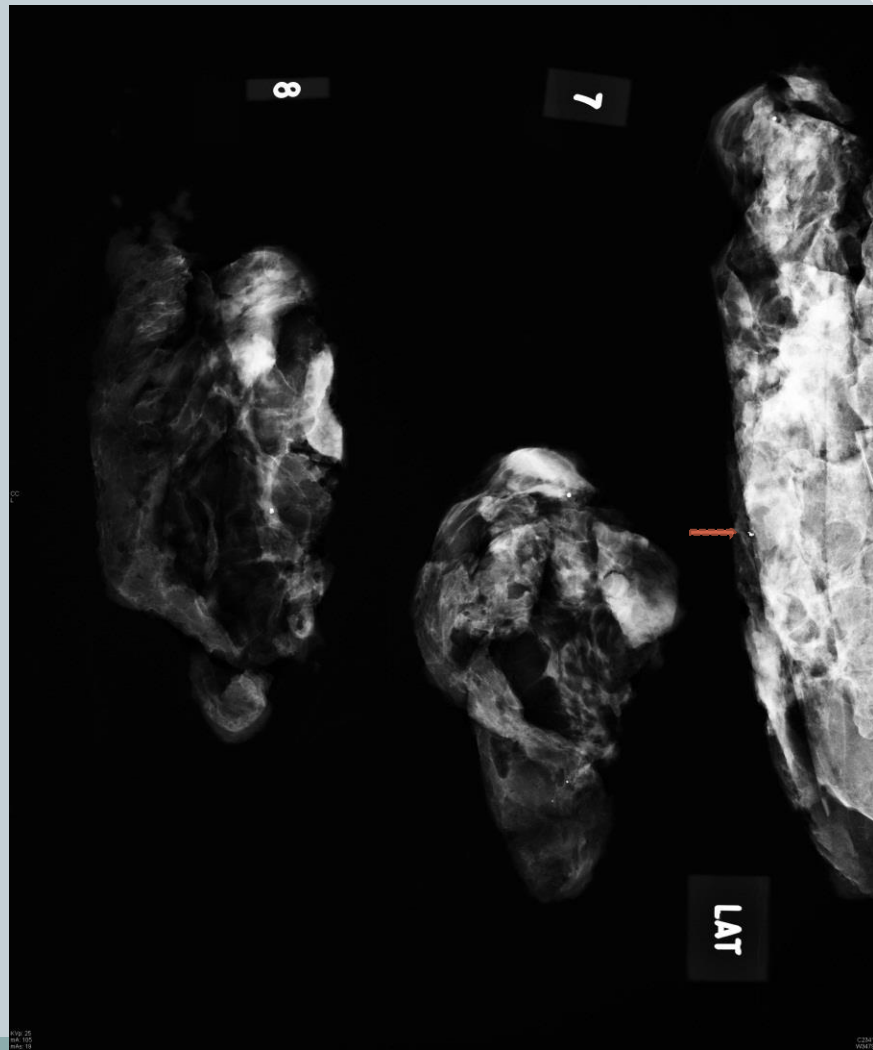


1

Medial



Specimen XR

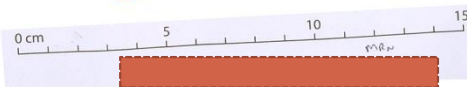
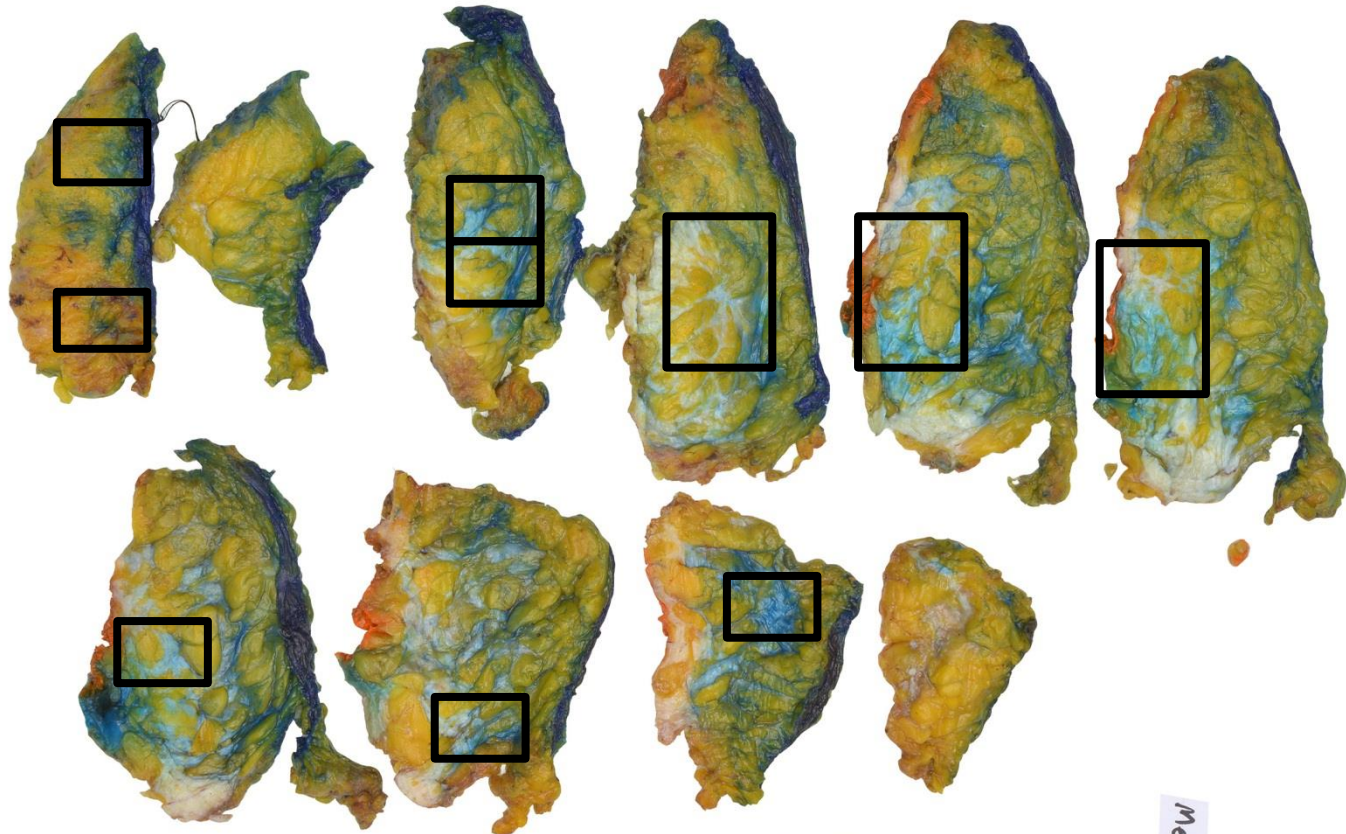




Blocks



Lateral

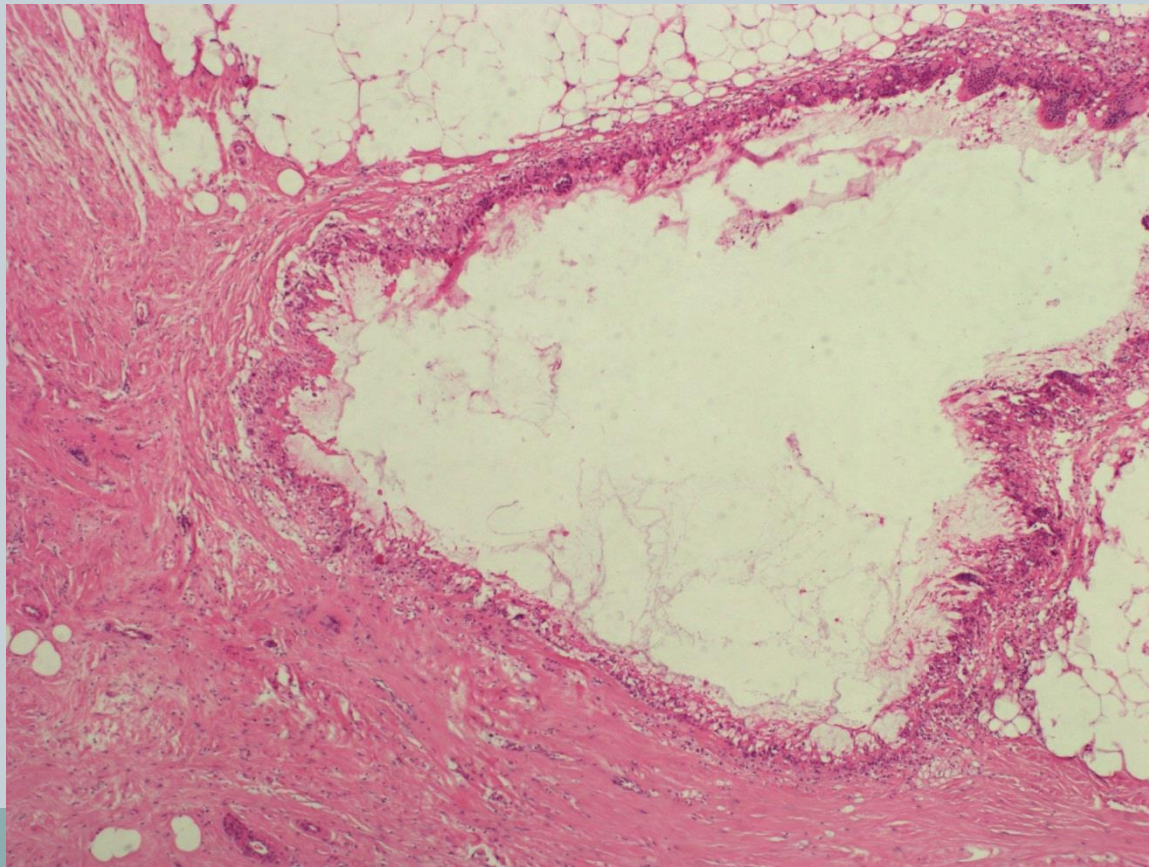


Medial

Final Histology



- Pathological complete response to chemotherapy
- Tumour bed and clip site identified

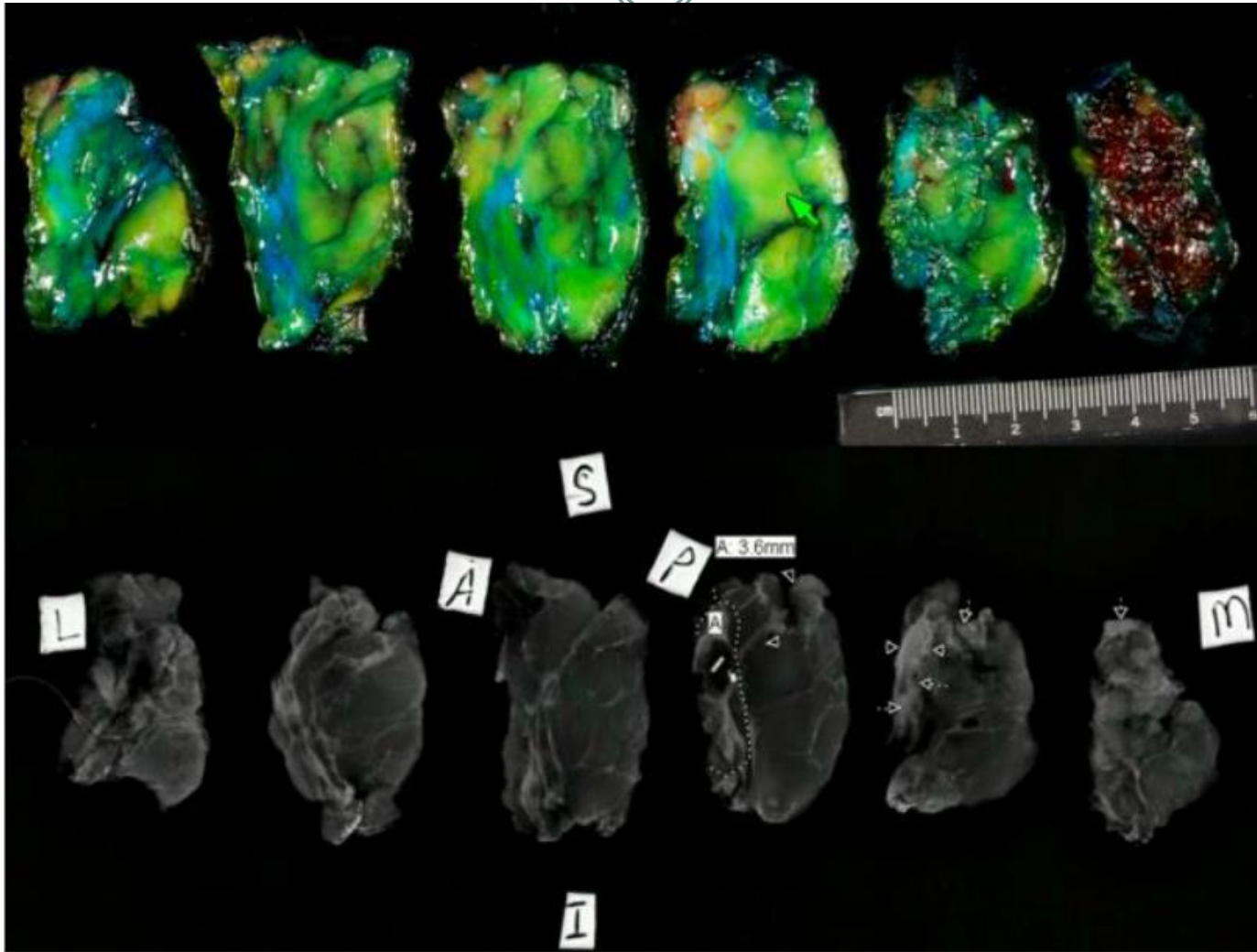


Specimen Handling



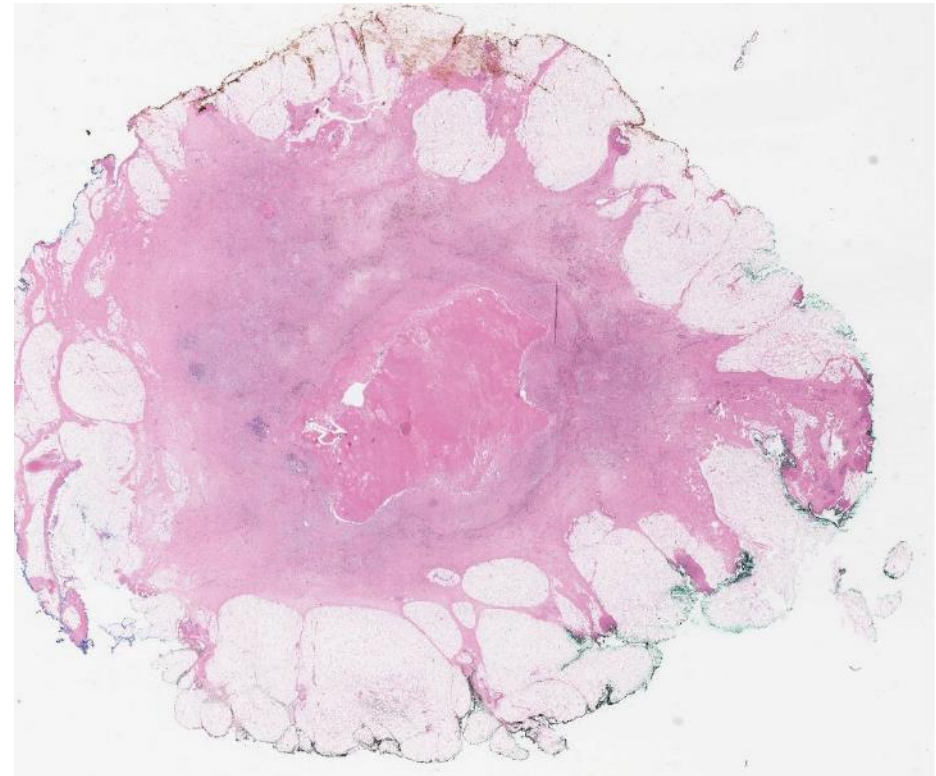
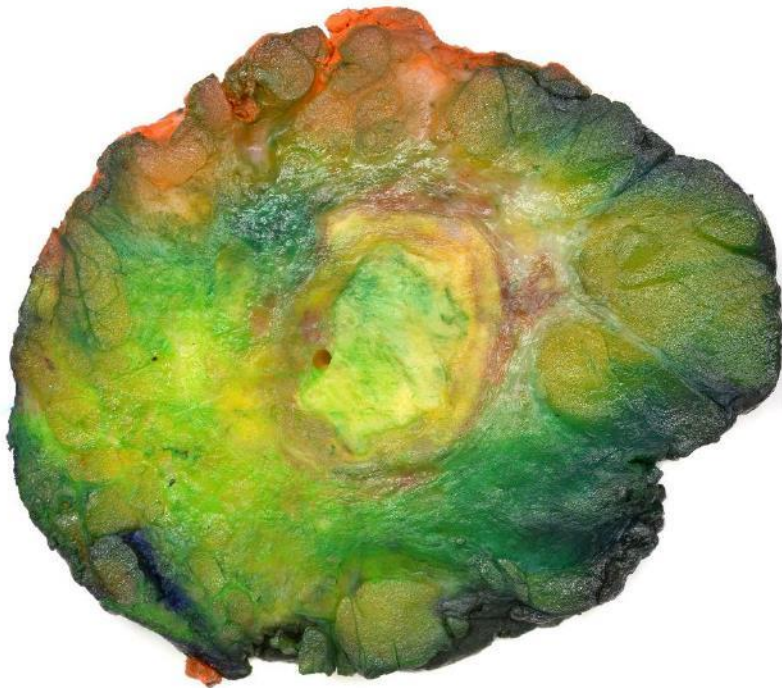
- Wide local excisions
 - Ink and slice as per local protocol
 - Thorough sampling of the specimen including sections to assess margins
 - Specimen x-ray may be helpful to localise clip or lesion

Specimen Handling

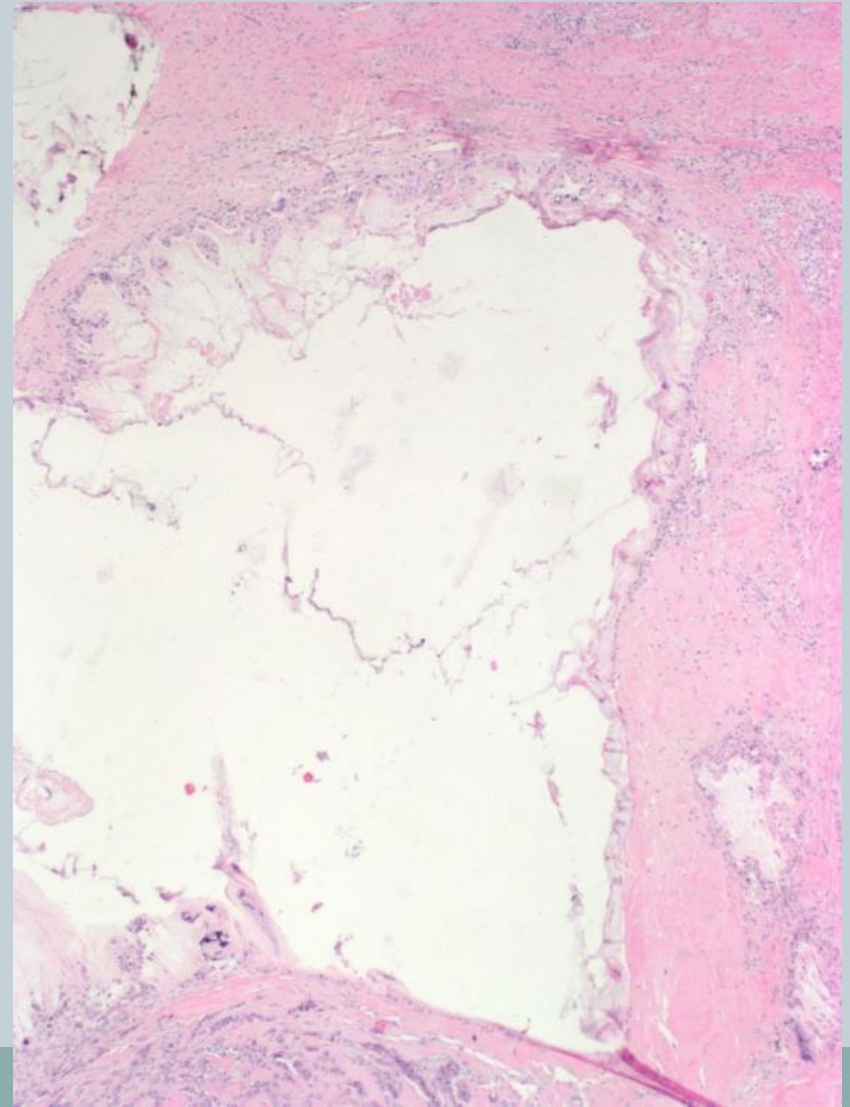
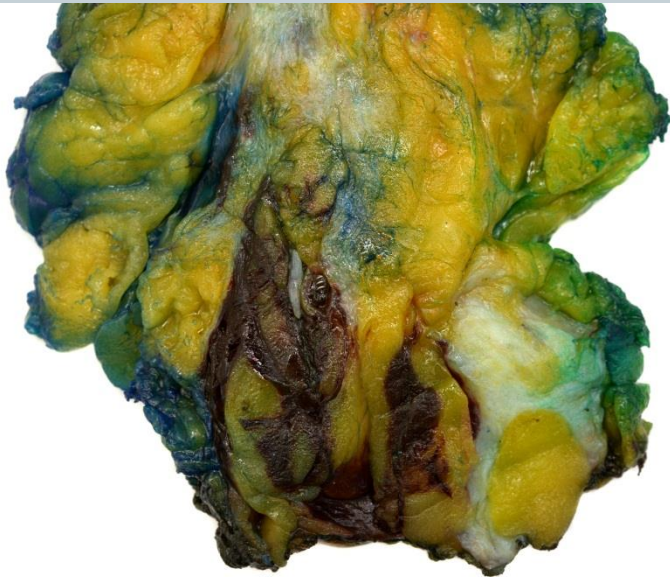


Courtesy of WF Symmans

Specimen handling



Specimen handling – clip site



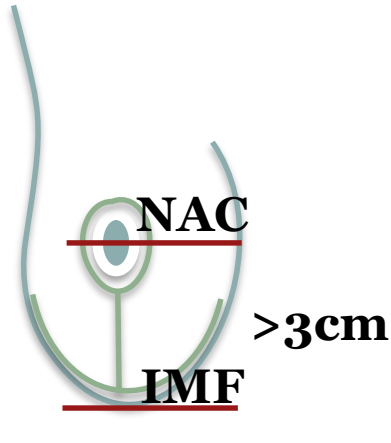
Oncoplastic Surgery



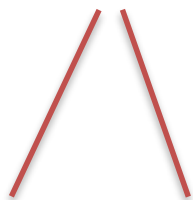
- Substantial risk of deformity if amount of tissue excised is greater than 20% of breast volume
- Increased risk for upper inner and lower quadrants
- Involves excision of glandular tissue including tumour, filling of the defect and repositioning of the nipple areolar complex
- Two main methods:
 - Volume displacement – mobilising local dermoglandular tissue to fill the defect (mammoplasty) with loss of volume
 - Volume replacement – tissue is transferred from a remote site either as a pedicle or as a free flap, e.g. latissimus dorsi or intercostal artery perforator flaps

Breast operative techniques

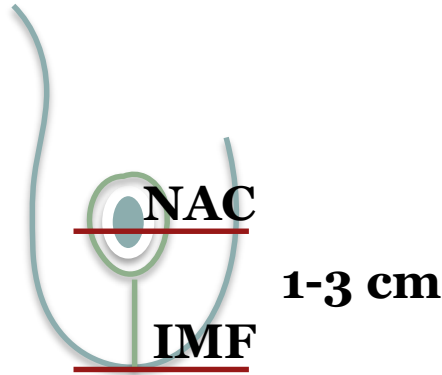
	General Surgeon (Non-Oncoplastic)	Breast Surgeon (Level I Oncoplastic)	Oncoplastic Surgeon (Level II)
Volume Excision	Small (~5-10%)	<20%	20-50%
Aesthetic placed Incisions	Desirable	Expected	Pertinent to procedure
Parenchymal Mobilisation	None	Minimal (for cavity wall apposition)	Major & Complex
Skin excision for re-shaping or NAC displacement	No	No	Yes
Formal Oncoplastic training & Assessment mandatory	No	No	Yes



Grade 3 Ptosis



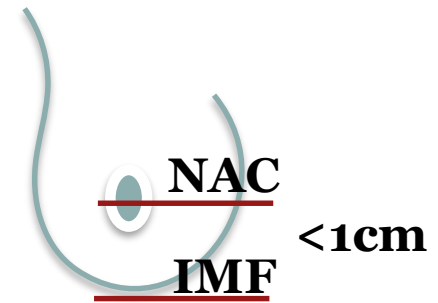
Wise-pattern Mammoplasty Other patterns e.g., bat-wing



Grade 2 Ptosis



Vertical scar Mammoplasty



Grade 1 or Non-ptotic

Lateral

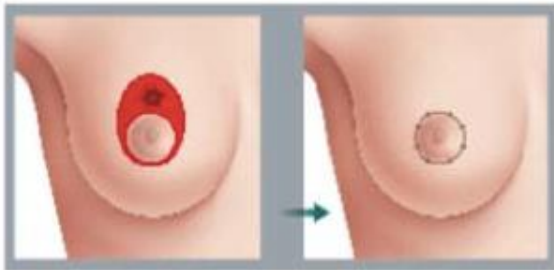
Central

Medial

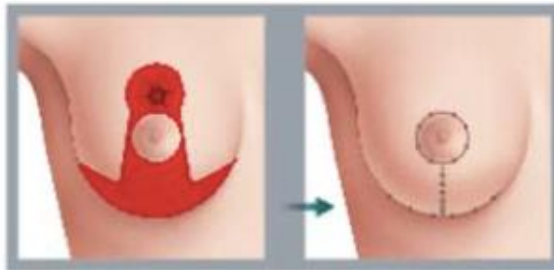
LiCAP

TDAP
LD Miniflap

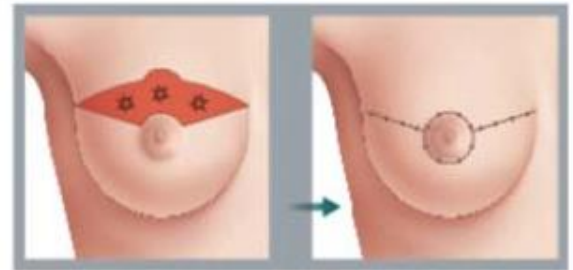
TDAP
LD Miniflap
TUG/PAP



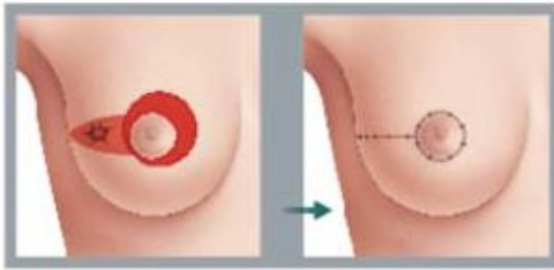
Periareolar mammoplasty



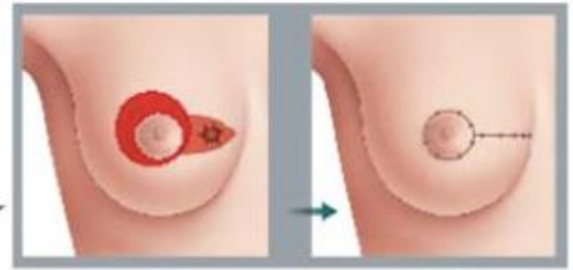
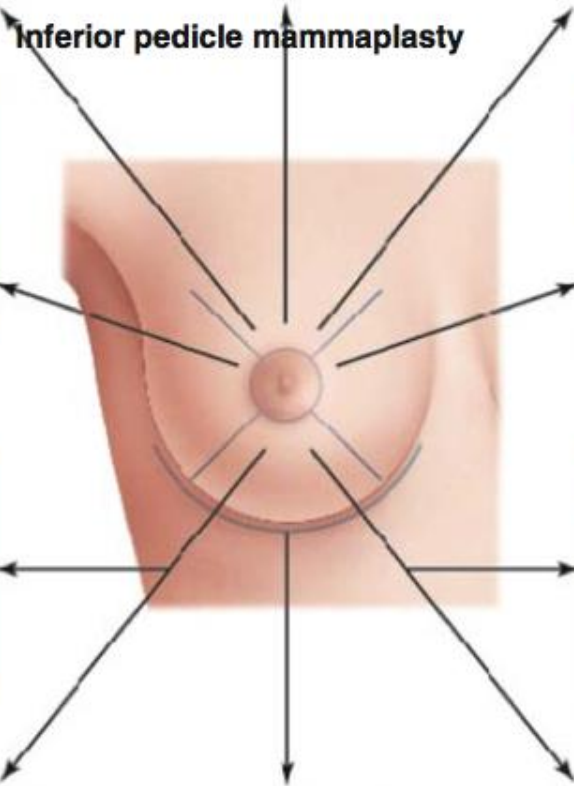
Inferior pedicle mammoplasty



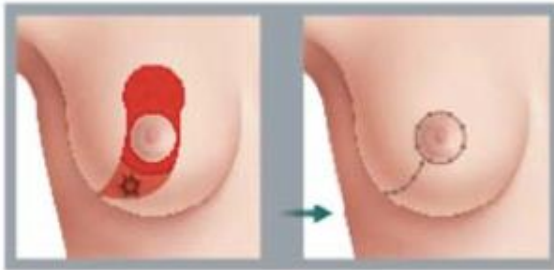
Omega mammoplasty



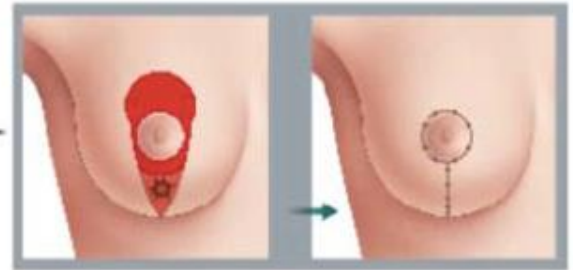
Lateral mammoplasty



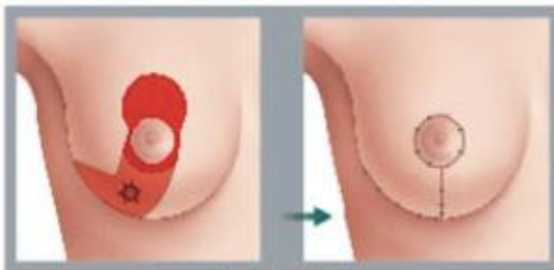
Medial mammoplasty



J-plasty



Vertical mammoplasty



L-plasty



Inferior Mammary Fold plasty



Inverted-T mammoplasty

Oncoplastic Specimens



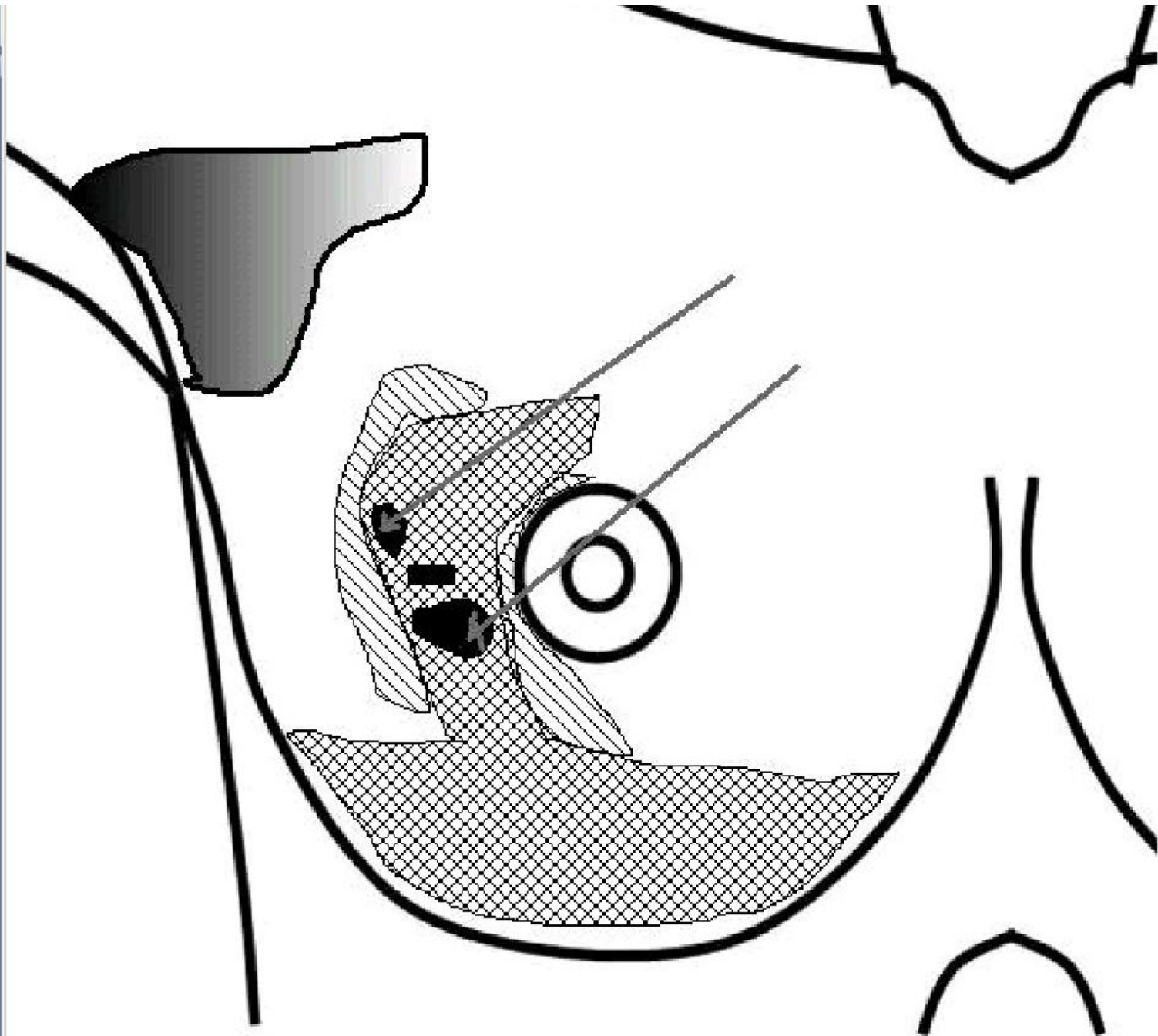
- **TABLE 3: Post-op specimen dimensions (mm)**

	WLE	OBS	p-value
M-L	50 (40-65)	118 (82-179)	<0.001*
S-I	44 (35-60)	109 (84-130)	<0.001*
A-P	25(20-37)	56(41-76)	<0.001*

- **TABLE 4: Specimen weight (g)**

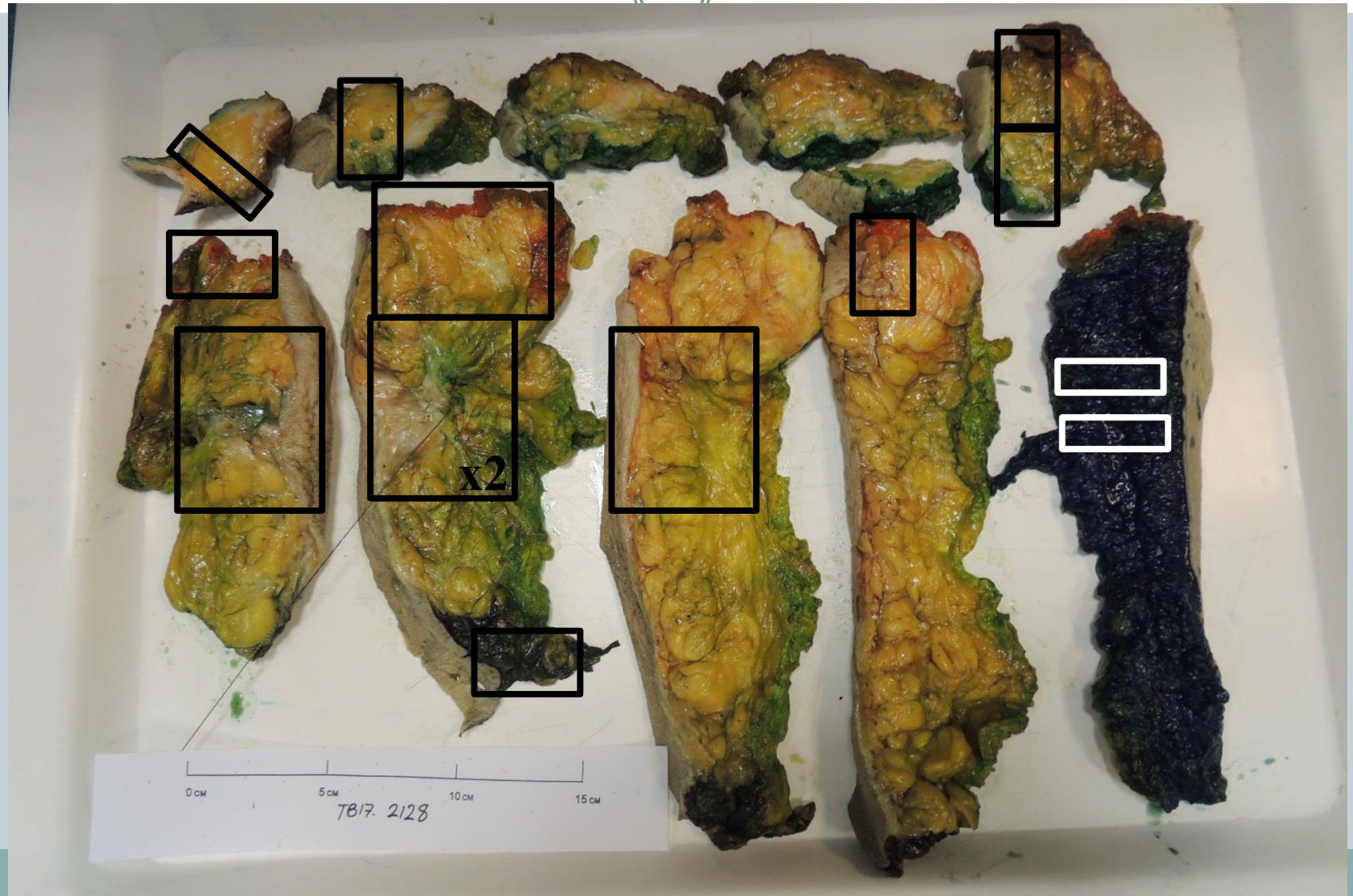
WLE	OBS	p-value
31.0 (17.6-44.6)	72.1 (41.9-184.1)	<0.001*



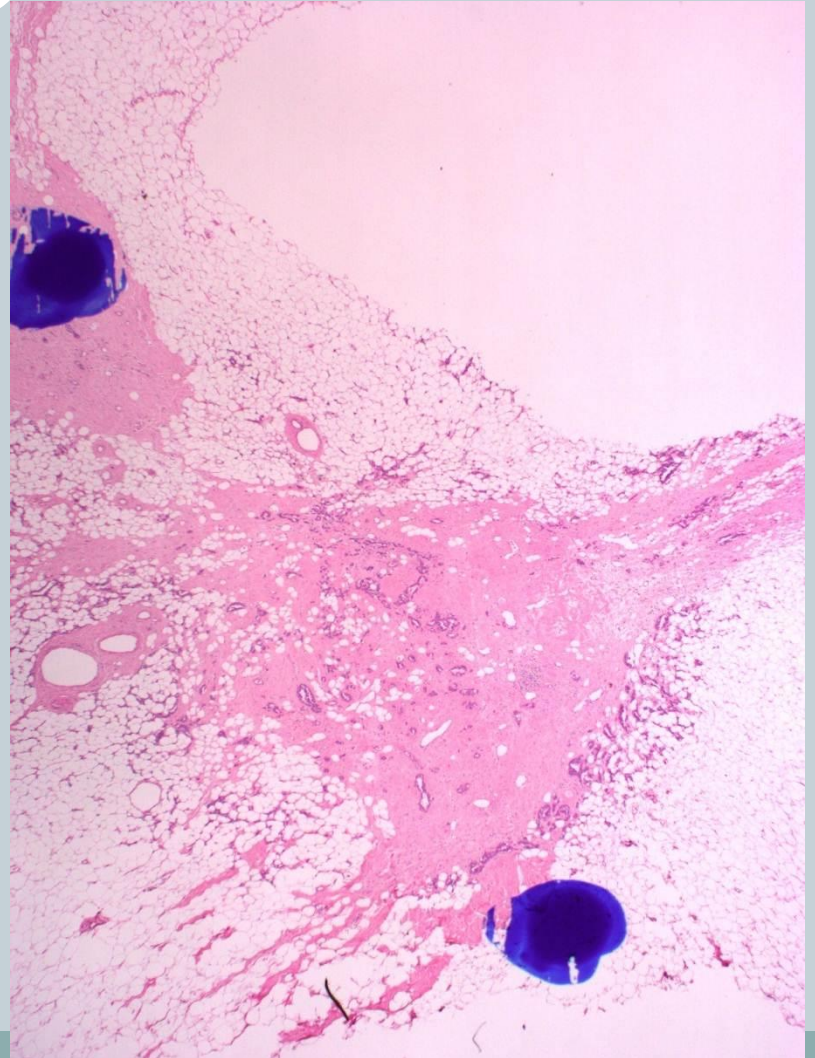
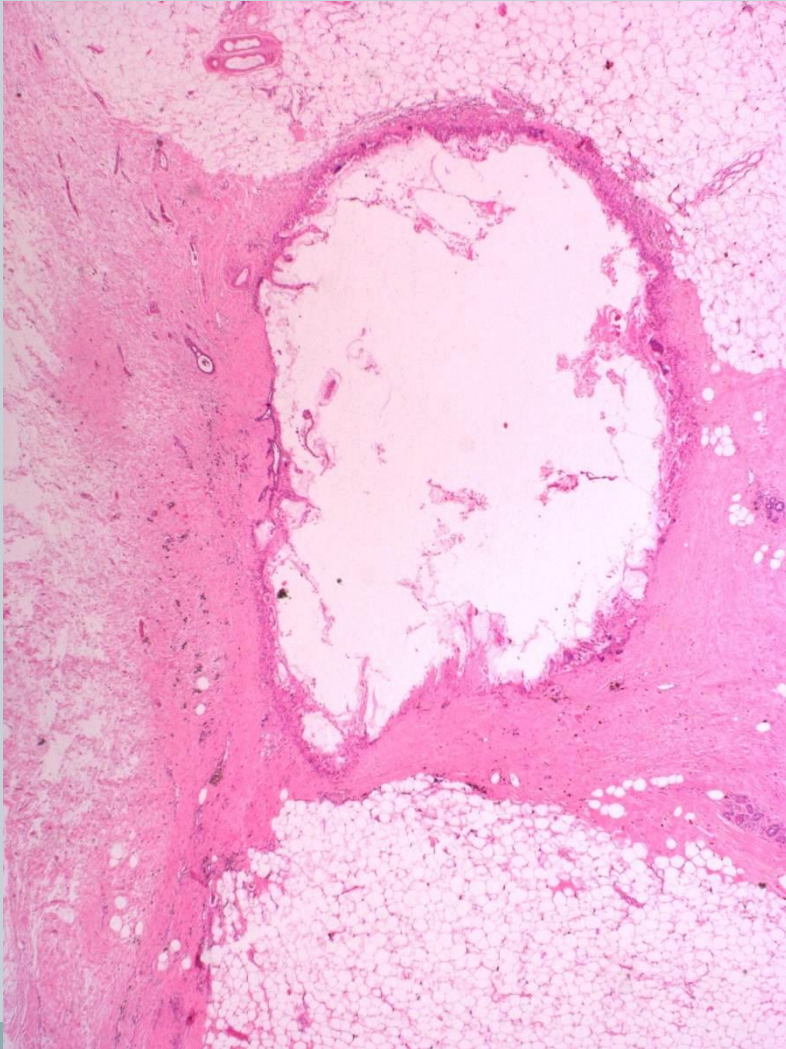


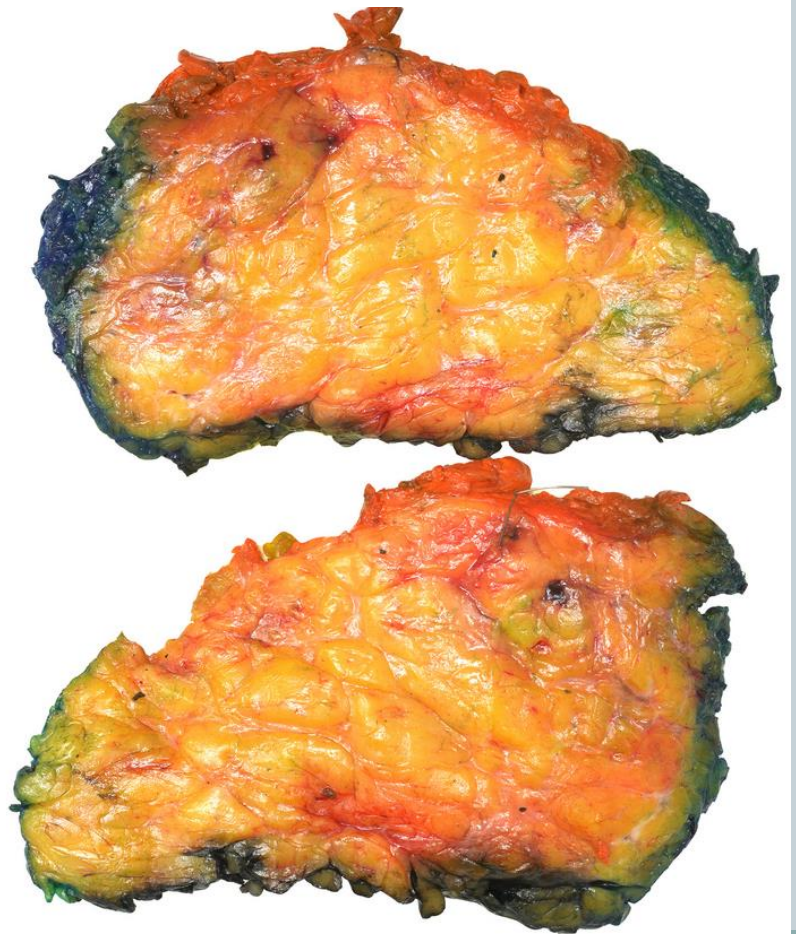
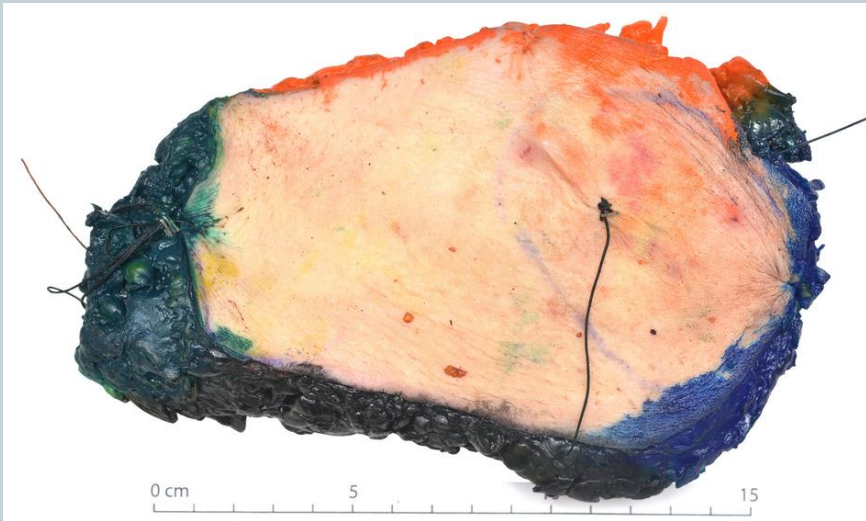


Blocks (+ alternate slices of cavity shaves)

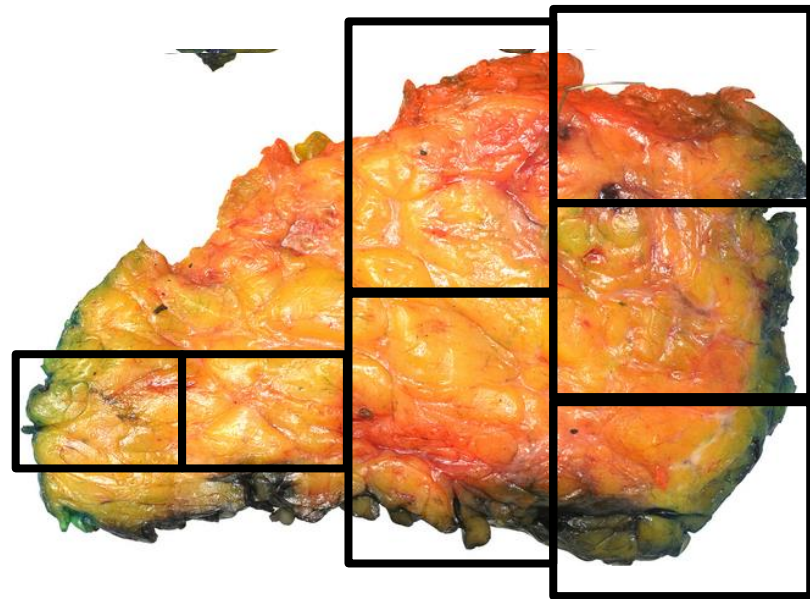
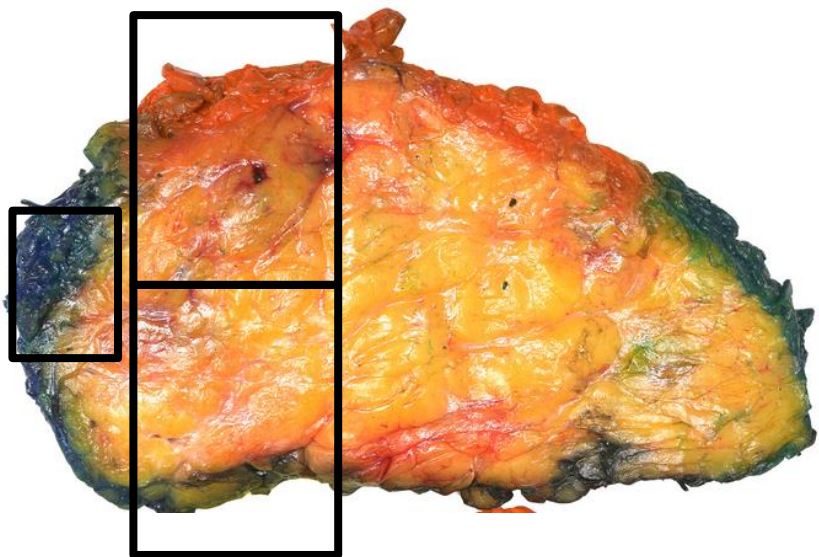


Histology





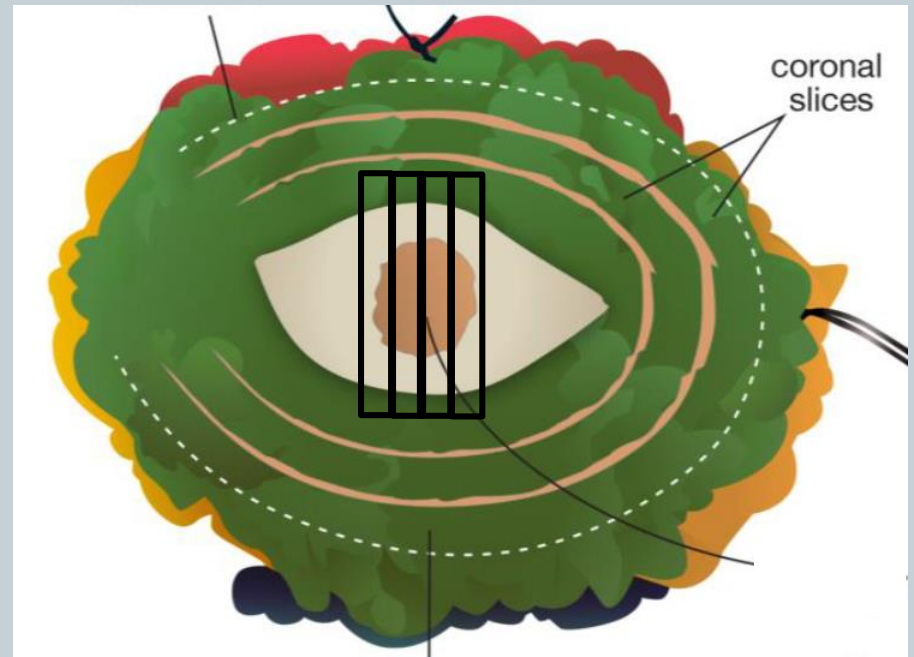
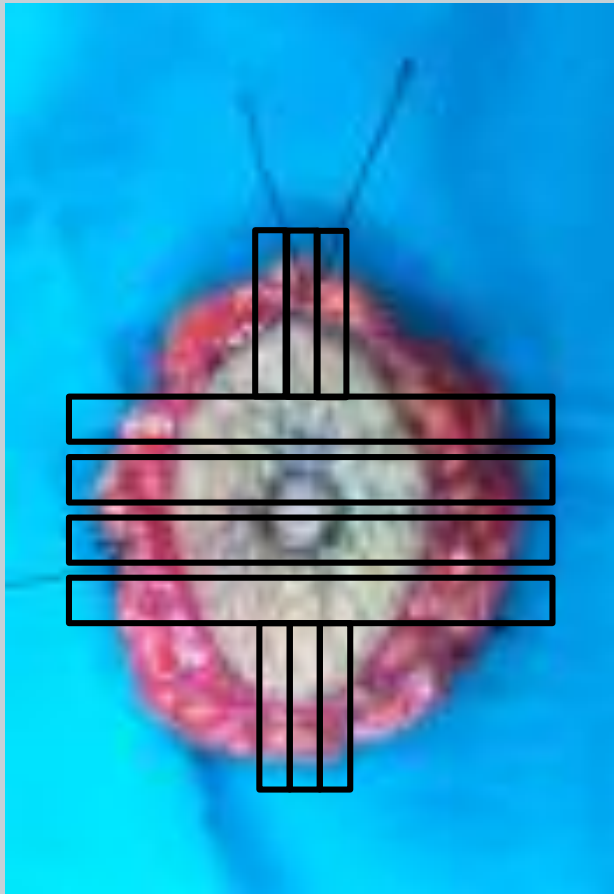
Blocks



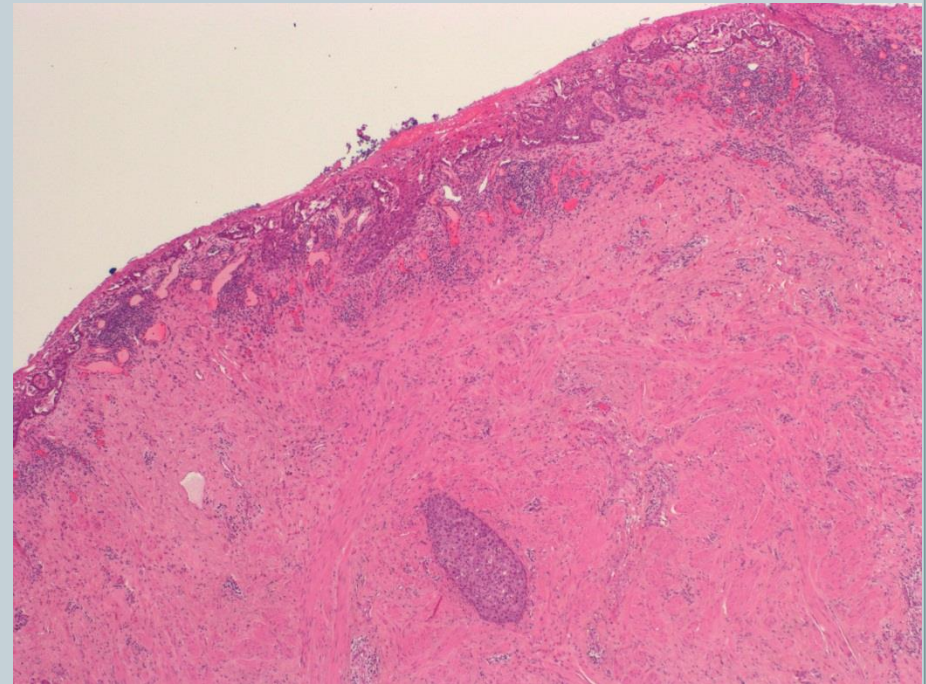
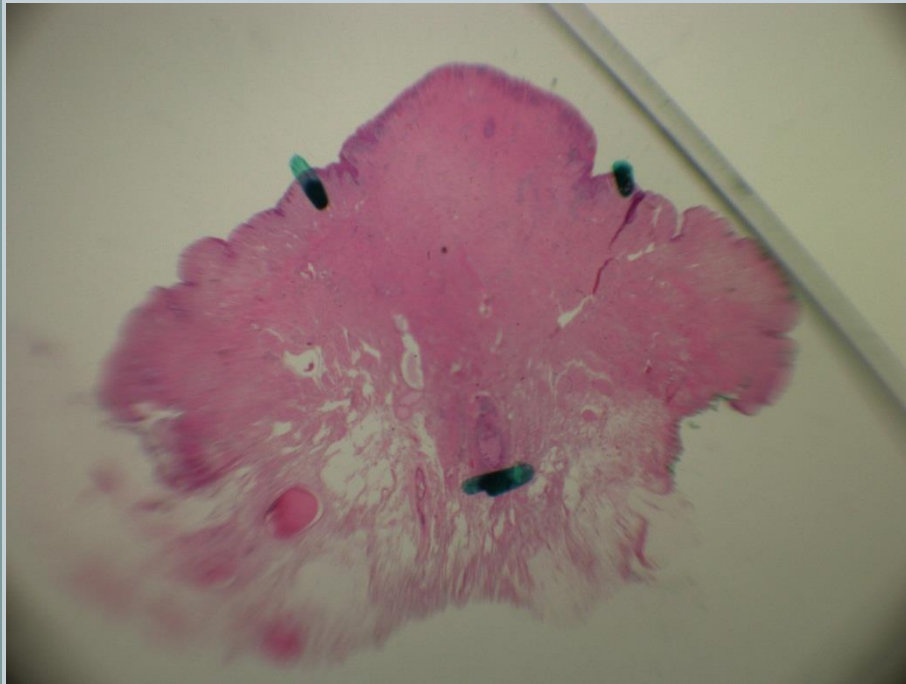
Central excisions



Central excisions



Central excisions



Accompanying Reduction Specimens



- Ipsilateral or contralateral (balancing)
- Slice at 1-2 cm intervals
- Examine tissue carefully by inspection and palpation
- Sample any gross abnormalities
- Minimum of two blocks if no lesion (our SOP is 4 blocks in women with history of breast cancer)