Breast Surgery – When Less is More and More is Less

E MacIntosh, MD

June 6, 2015

Presenter Disclosure

- Faculty: E. MacIntosh

- Relationships with commercial interests:
  - None

Mitigating Potential Bias

- Not applicable

Learning Objectives

1. Recognize contraindications to radiation therapy (where breast conserving surgery would not be recommended)
2. Recognize clinical scenarios where mastectomy would be the preferred surgical treatment option
3. Describe the rationale for nodal staging in breast cancer
4. Identify patients for whom an axillary lymph node dissection would be more appropriate than sentinel node biopsy

Goals of Breast Cancer Surgery

- Remove affected tissue
  - Lumpectomy (BCT) vs mastectomy
  - Nodal resection if metastatic
- Provide prognostic information
  - Nodal assessment: sentinel node biopsy, axillary node dissection
- Assist in determining benefit of adjuvant treatment

The ultimate aim is cure – this usually requires a multimodality treatment approach.

Surgical Treatment Options

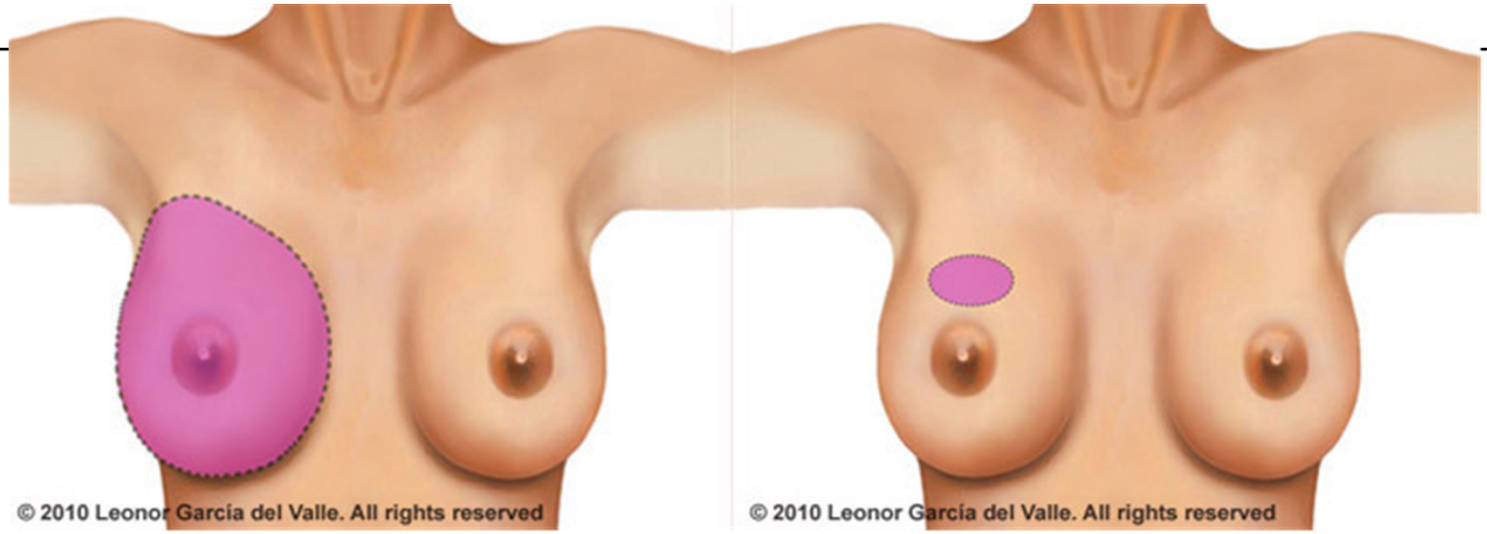
- Early breast cancer (Stage 0, I and II)
  - Lumpectomy and radiation (BCT)
  - Mastectomy
  - Mastectomy with reconstruction
- Locally advanced breast cancer
  - Usually mastectomy after neoadjuvant therapy
- Inflammatory breast cancer
  - Mastectomy after neoadjuvant therapy

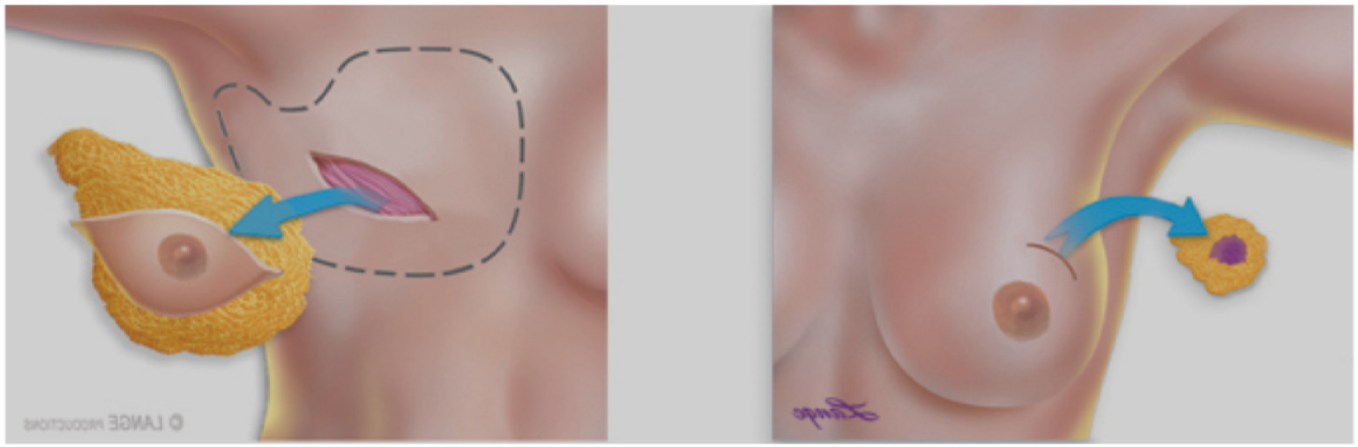
Breast Cancer

- Surgery/Radiation (Local therapy)
  - Excise
    - Lumpectomy (radiation is indicated)
    - Mastectomy (radiation indicated if T>5cm or N+)
    - Reconstruction is optional
  - Stage
    - Assess lymph nodes
      - Usually sentinel lymph node biopsy
      - If node +ve axillary node dissection is often indicated

BCT – Lumpectomy and radiation

- BCT implies negative resection margins and acceptance of radiation therapy
- Offers equivalent survival to mastectomy in early breast cancer
- Local in-breast recurrence rates should be <10%





Outcomes are equal

What would preclude BCT?

- Contraindication to radiation
  - Prior radiation – Hodgkins, previous breast cancer
  - Scleroderma, SLE
  - Pregnancy – radiation can be delivered post-partum
- Inability to achieve negative resection margins
  - Failed lumpectomy
  - Multicentric cancer
  - Poor cosmetics
- Patient preference
  - Desire to avoid radiation
  - Desire to decrease risk of local recurrence

When would mastectomy be recommended?

As Initial surgery:

- If contraindication to XRT
- In-breast recurrence
- BRCA gene carrier
- Multiple tumors – in different quadrants
- Large cancer/large volume disease
- Locally advanced/inflammatory breast cancer

Following failed BCT

Factors associated with the Frequency of Initial Total Mastectomy: Results of a Multi-Institutional Study

Feigelson, et al JACS 2013

- Jan 2003-Dec 2008 at 4 collaborating institutions
- 2384 invasive breast cancers
- Overall initial total mastectomy (TM) rate was 16.7%
- Rate of TM was highest among young women (<45yrs) - 23.8%
- TM was also associated with age>75 yrs -20%
- Asian women had a much higher frequency (32.2%)
- Preoperative MRI (7.7%) - doubled the rate of mastectomy
- Use of TM was highly dependent on the individual surgeon with a 2-fold difference found between two randomly selected surgeons from different sites with no other explanation

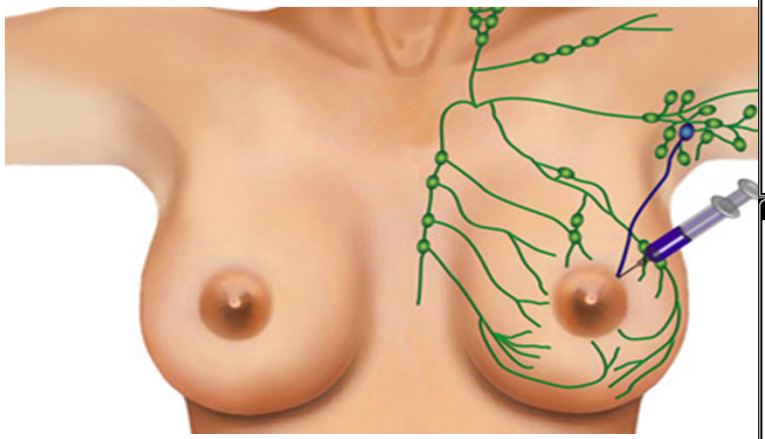
Nodal Surgery in Breast cancer

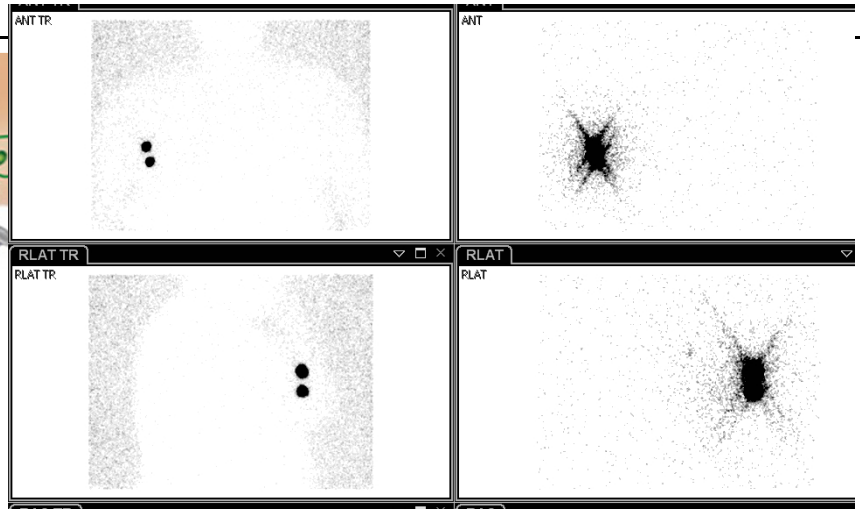
- The status of the axilla is an important predictor of prognosis
- Sentinel lymph node(SLN) biopsy accurately detects the presence of axillary metastases with less morbidity than axillary dissection (AND)
- SLN biopsy should be offered to all patients with invasive breast cancer with a clinically negative axilla (& DCIS treated with mastectomy following core bx)
- Patients with a clinically and pathologically positive axilla benefit from AND when identified preop

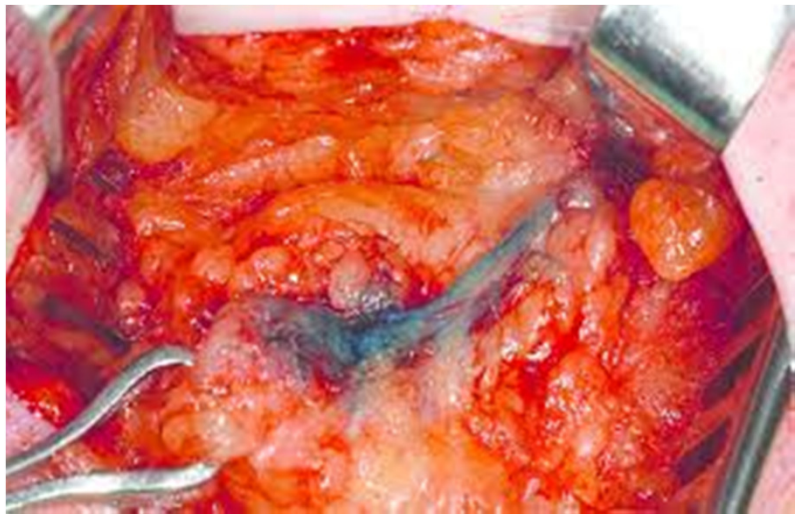
Sentinel Lymph Node Biopsy

- 1st LN in the draining basin that directly receives lymph from a solid tumour
  - Absence of metastatic disease in this LN should exclude cancer in the rest of the nodal basin
- Minimally invasive assessment of nodal status allows us to:
  - Select appropriate patients for axillary dissection
  - Prevent the morbidity of an axillary dissection
  - Improve histopathologic evaluation of nodes

Sentinel Lymph Node Biopsy







Which patients with positive axillary nodes can forgo AND?

Sentinel nodes can be evaluated pathologically to detect small volume disease.

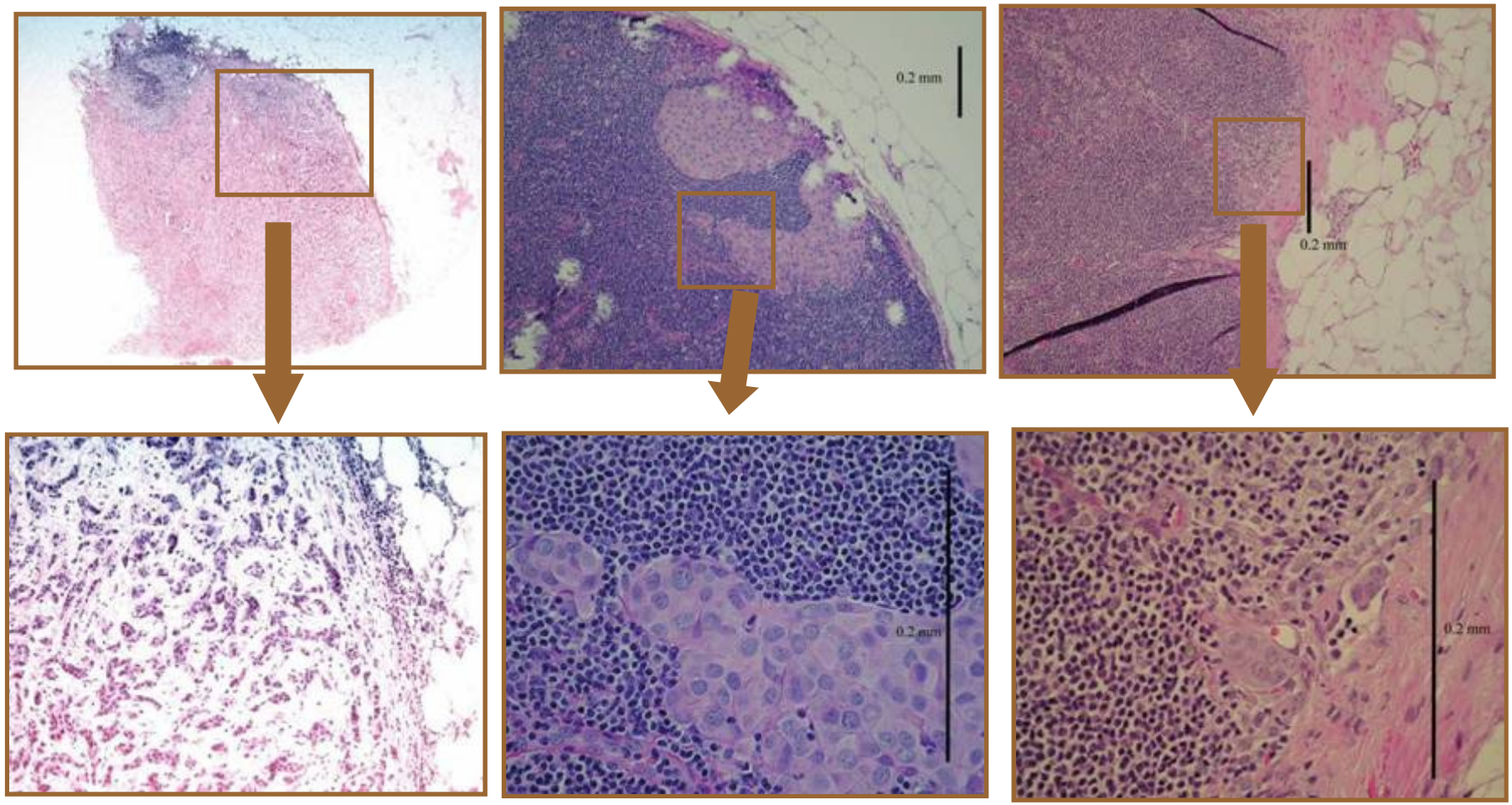
What is a positive node?

Do all “positive” nodes carry the same prognostic implication?

Macro pN1

Micro pN1mi

ITC pN0(i+)



Is an axillary node dissection necessary for SLN+ disease?

- Knowledge of total number of involved nodes has prognostic value
- ~40% of patients have additional +ve nodes
- Local disease control is important

ACOSOG Z11

- 856 patients having BCT for T1/2, N0 breast cancer underwent SLN biopsy
- If 1 or 2 positive sentinel nodes they were randomized to AND vs observation
- 97% received systemic adjuvant treatment and whole breast radiation
- Median follow-up 6.3 years
- No difference in LR recurrence 3.4%

Clinical Scenarios

- SLN Biopsy -ve
- SLN Biopsy -ve intraop, +ve on final pathology
- SLN Biopsy grossly +ve intraop
- SLN Biopsy clinically “normal” intraop, +ve on final pathology
  - How many nodes +/-?
  - Will additional surgery affect adjuvant systemic treatment? Or radiation? recommendations

Omission of axillary node dissection (AND)

It is reasonable to omit an AND for a low risk subset of sentinel node positive patients such as:

- Low volume disease eg. Isolated tumor cells, micomets in sentinel nodes
- <2 positive nodes
- Multiple negative nodes
- No perceived difference in adjuvant treatment recommendations
- Patient unwilling to accept potential morbidity related to axillary node dissection

Treatment of the Sentinel Node Positive Axilla

- Why?
  - Prognosis
  - Local Disease Control
    - ~30% -40% patients with +SLNs will have +non-sentinel nodes

- Options
  - Observation
  - Completion ALND (Local control 98%)
  - Axillary Radiation (Local control 96%) No survival difference compared to ALND

Most node positive patients will receive radiation regardless.

When is SLN Biopsy not recommended

Patients who should not have any axillary surgery:

- Prophylactic surgery
- Ductal Cancer In Situ having lumpectomy
- History of a prior axillary dissection

Patients who require an axillary node dissection:

- Inflammatory breast cancer
- Pathologically proven nodal metastases
- Highly clinically suspicious axilla

Conclusions

1. The majority of patients with breast cancer (up to 80%) are eligible for breast conserving surgery.
2. Factors leading to mastectomy include:
   - Tumour - failed lumpectomy, extent of disease, in-breast recurrence
   - Patient desires - access to radiation, anxiety, access to reconstruction, media
   - Surgeon influence

Conclusions

3. Determination of axillary node status is important in patients with invasive breast cancer.

4. An axillary node dissection likely provides improved local disease control in patients with grossly involved axillary disease but may be of little benefit in patients with more limited disease and increases surgical morbidity.