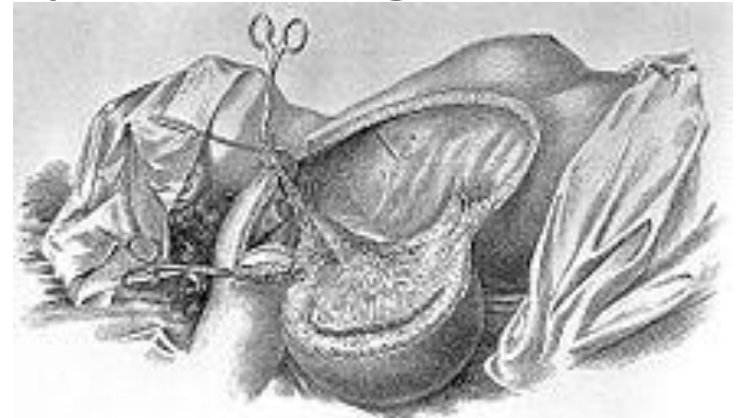


# IS LESS MORE?

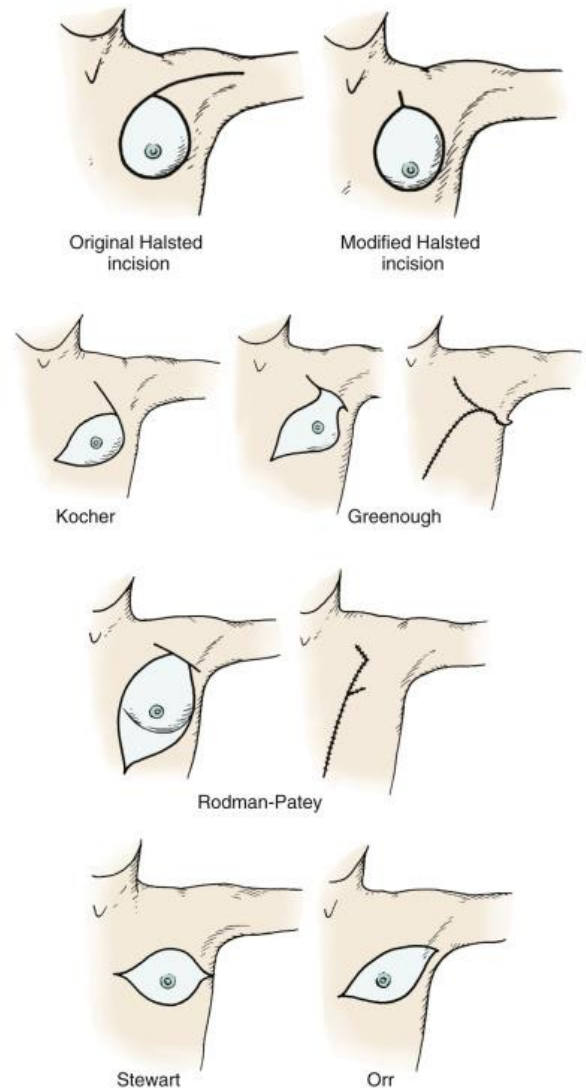
DR. K. LOHITA KRISHNA

# Breast surgery has a long history of “De-escalation”

- William S. Halstead in 1894 published the landmark paper, “the results of operation for the cure of cancer of the breast performed at the Johns Hopkins Hospital from June 1889 to January 1894”
- His work largely directed at preventing local or regional recurrence

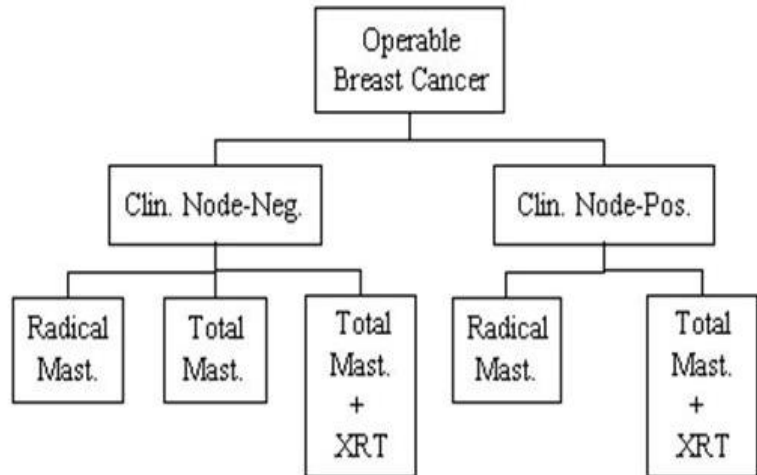


- D. H. Patey popularized “modified radical mastectomy” after 1936.
- Later, Auchincloss and Madden described techniques preserving both pectoralis
- 2 major goals
  - ✓ Viable skin flaps
  - ✓ No/minimal breast gland left behind



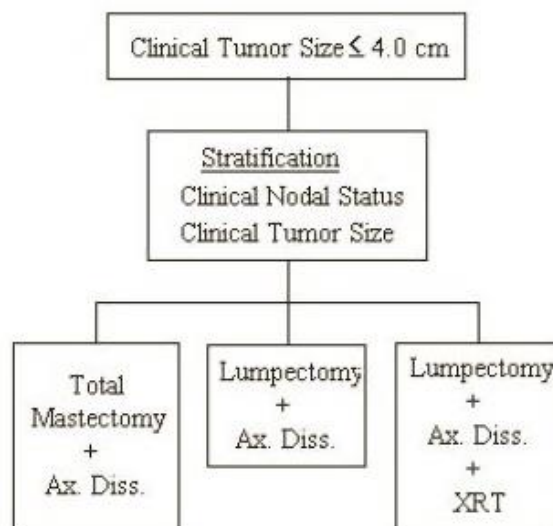
# Fischer.....

- Whether less extensive surgery was as effective as Halstead mastectomy



- NSABP -04
- At 3, 5, 10 and 25 years;
- No statistically significant difference in DFS, DDFS and OS
- Aggressive surgery with routine ALND for node negative is unwarranted and addition of local RT to total mastectomy provides no advantage

- By 1950s and 1960s breast conserving surgery started gaining popularity
- Is lumpectomy followed by radiation as effective as total mastectomy ? – NSABP-06



Source: NSABP-06

- Fisher B, Bauer M, Margolese R, Poisson R, Pilch Y, Redmond C, Fisher E, Wolmark N, Deutsch M, Montague E, Saffer E. Five-year results of a randomized clinical trial comparing total mastectomy and segmental mastectomy with or without radiation in the treatment of breast cancer. New England Journal of Medicine. 1985 Mar 14;312(11):665-73.

- No statistically significant difference in OS, DFS OR DDFS
- However, there was significant difference in ipsilateral breast tumor recurrence.
  - ✓ 39.2% in lumpectomy alone
  - ✓ 14.3% in lumpectomy + RT
  - ✓ 10.2% in MRM
- BCS is safe
- Showed the importance of RT in decreasing LR

Fisher B, Bauer M, Margolese R, Poisson R, Pilch Y, Redmond C, Fisher E, Wolmark N, Deutsch M, Montague E, Saffer E. Five-year results of a randomized clinical trial comparing total mastectomy and segmental mastectomy with or without radiation in the treatment of breast cancer. New England Journal of Medicine. 1985 Mar 14;312(11):665-73.

Goal of BCS – Achieve local control, preserve healthy breast tissue and provide a acceptable cosmetic outcome

### Margin assessment techniques

- Gross examination
  - Specimen mammogram
  - Frozen section
  - Cavity shaving
  - Intra-operative ultrasound
  - Radiofrequency spectroscopy
  - Diffusion weighted MRI
  - Optical coherence tomography
  - Near-infrared fluorescence optical imaging
- NO INK ON TUMOR..!**

# Breast conservation.....

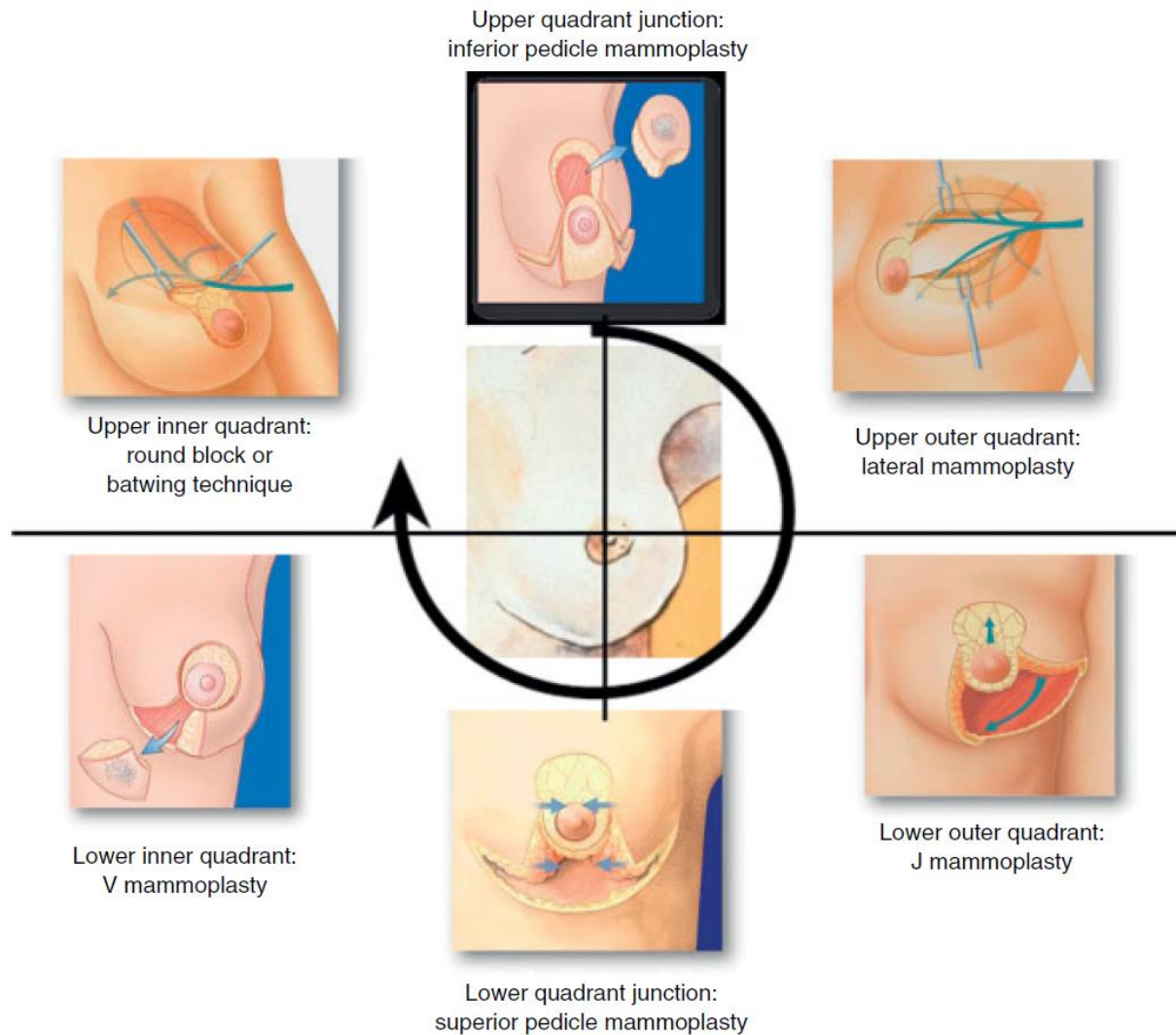
## **ABSOLUTE CONTRAINDICATIONS**

- Inflammatory breast cancer
- Multicentric disease
- Persistent positive margins
- 1<sup>st</sup> trimester of pregnancy

## **RELATIVE CONTRAINDICATIONS**

- Previous breast irradiation
- Connective tissue disorder (scleroderma, sjogren syndrome)
- Very large tumour size relative to breast volume

# Simple BCS evolved to **ONCOPLASTIC SURGERY**



Clough KB, Ihrai T, Oden S, Kaufman G, Massey E, Nos C. Oncoplastic surgery for breast cancer based on tumour location and a quadrant-per-quadrant atlas. *Journal of British Surgery*. 2012 Oct;99(10):1389-95.

# Must read....

Ann Surg Oncol (2010) 17:1375–1391  
DOI 10.1245/s10434-009-0792-y

Annals of  
**SURGICAL ONCOLOGY**  
OFFICIAL JOURNAL OF THE SOCIETY OF SURGICAL ONCOLOGY

ORIGINAL ARTICLE – BREAST ONCOLOGY

## **Improving Breast Cancer Surgery: A Classification and Quadrant per Quadrant Atlas for Oncoplastic Surgery**

**Krishna B. Clough, MD, Gabriel J. Kaufman, MD, Claude Nos, MD, Ines Buccimazza, MD, and Isabelle M. Sarfati, MD**

Department of Surgery, The Paris Breast Center (L’Institut du Sein), Paris, France

DOI: 10.1111/j.1075-122X.2006.00331.x

ORIGINAL ARTICLE

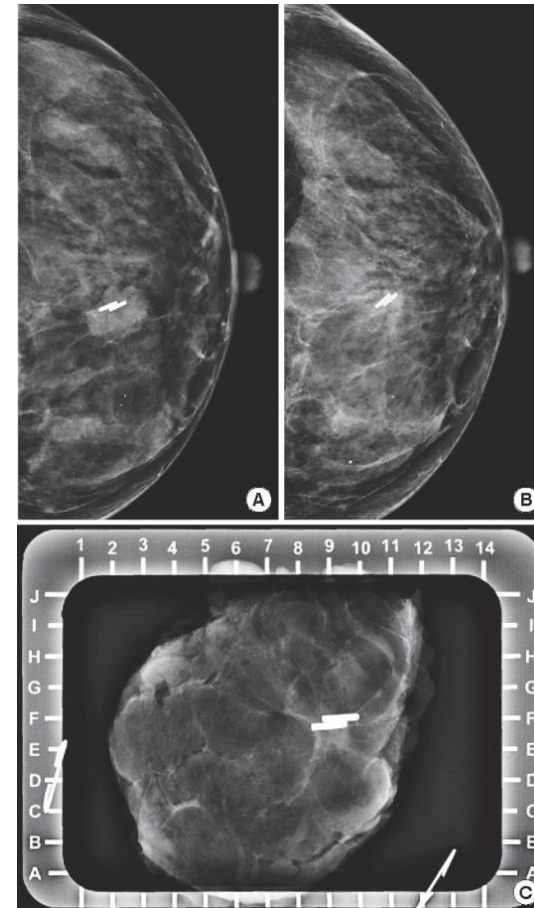
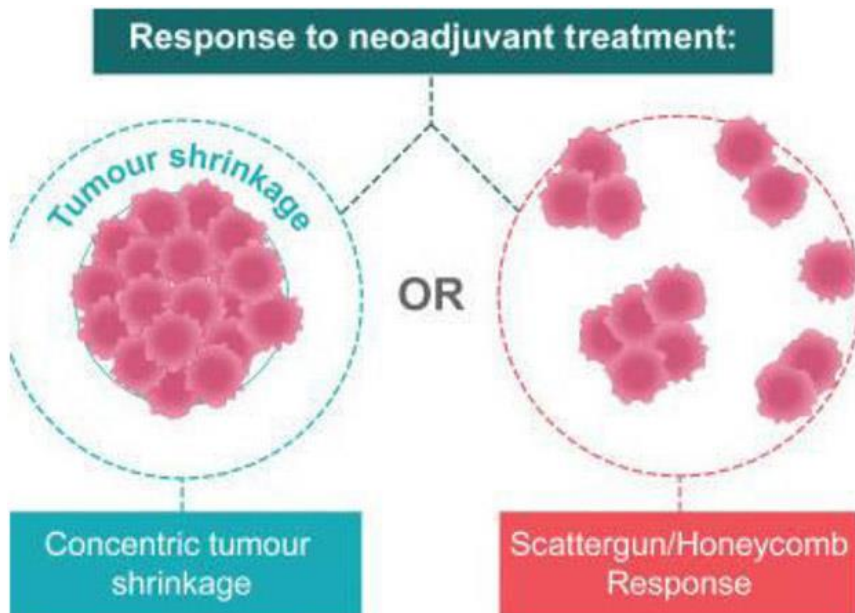
## **Oncoplastic Techniques in the Conservative Surgical Treatment of Breast Cancer: An Overview**

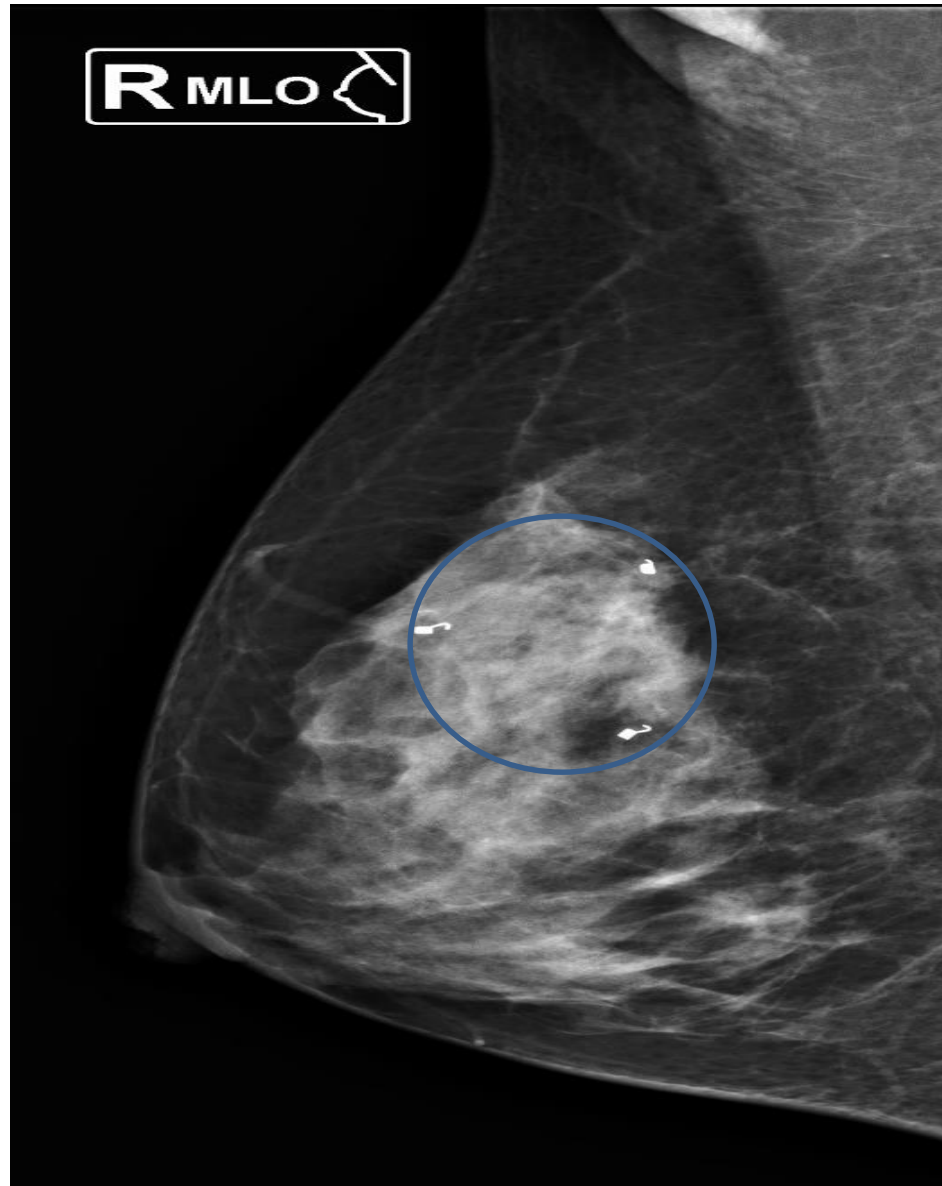
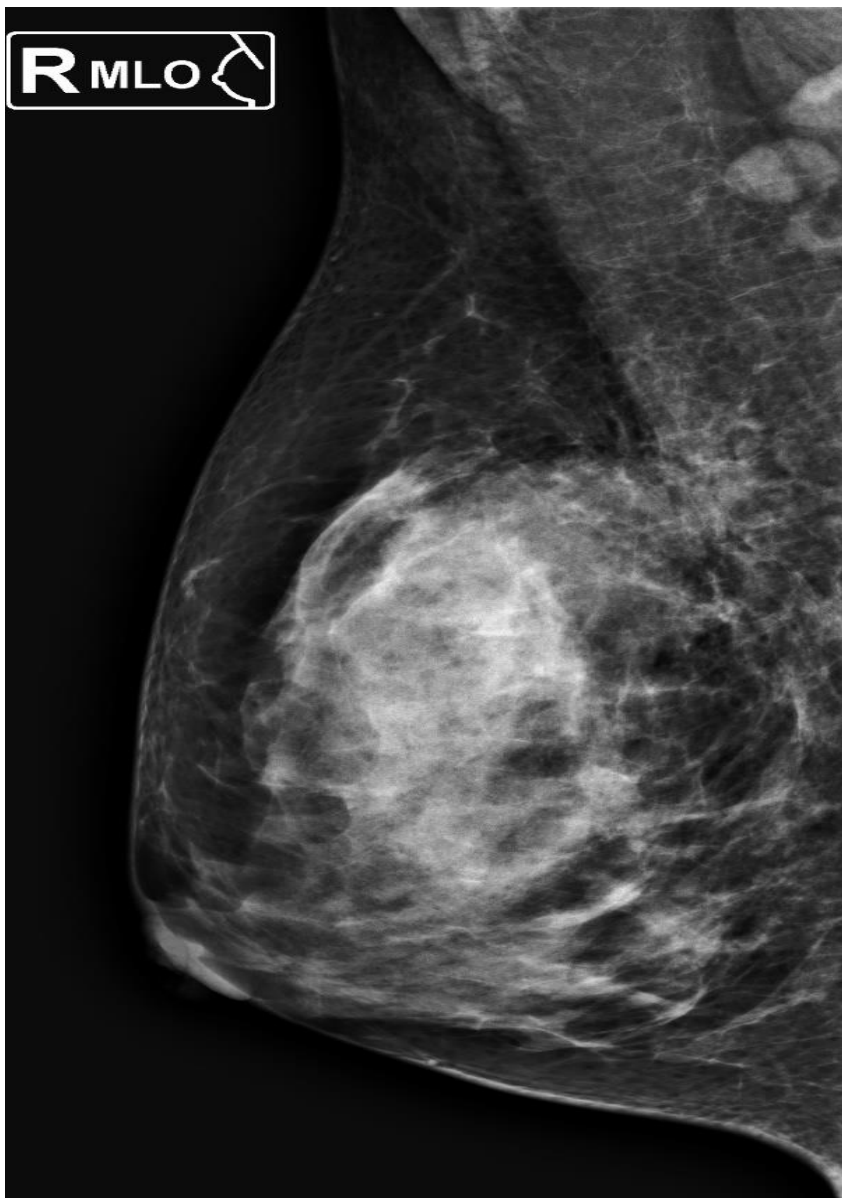
**Riccardo Masetti, MD, Alba Di Leone, MD, Gianluca Franceschini, MD, Stefano Magno, MD, Daniela Terribile, MD, Maria Cristina Fabbri, MD, and Federica Chiesa, MD**

*Breast Surgery Unit, Catholic University, Rome, Italy*

# Using systemic therapy

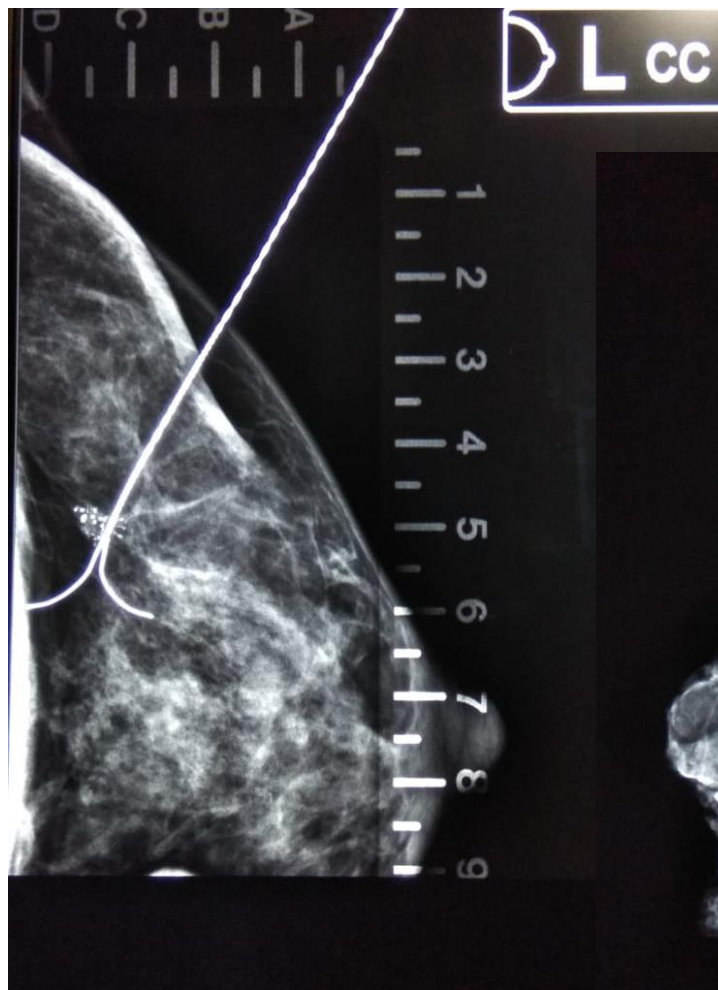
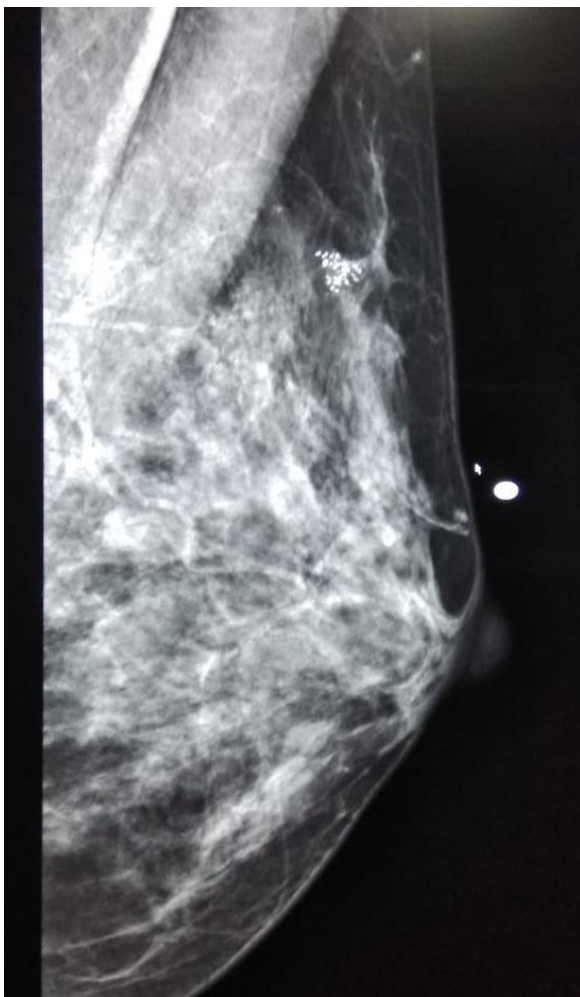
- NACT makes tumours amenable for breast conservation



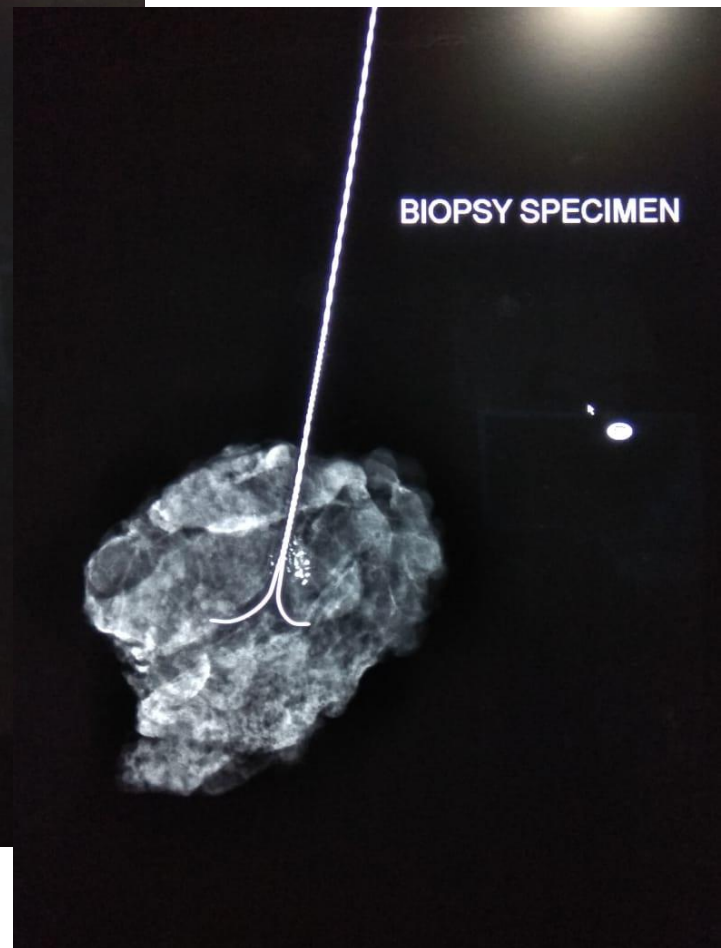


# Non palpable lesion localization

- Pre –operative localization is essential for non palpable screen detected lumps and post neoadjuvant lump localization
  - ✓ Wire localization
  - ✓ Non – wire localization

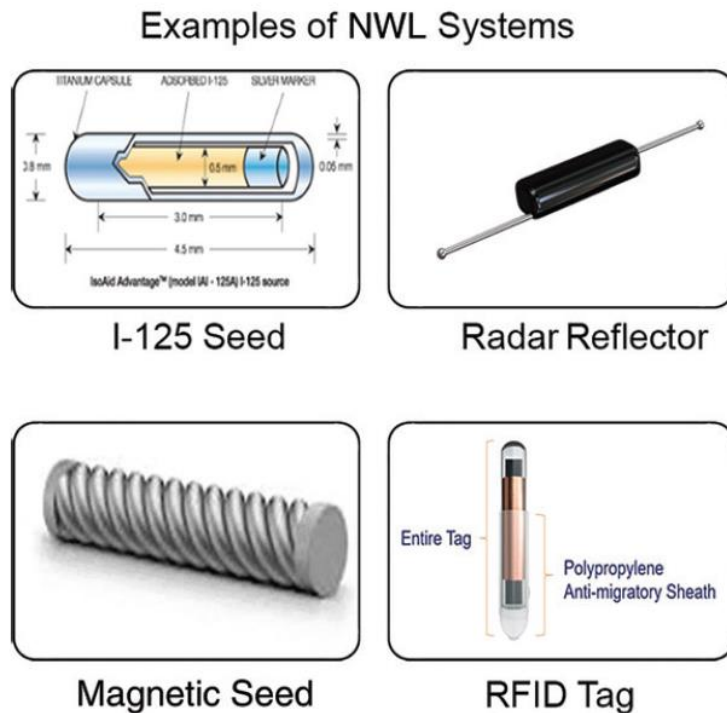


Wire in situ



Specimen  
mammography

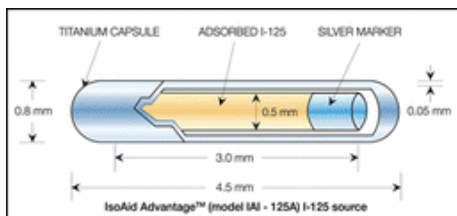
- **Non wire localisation**



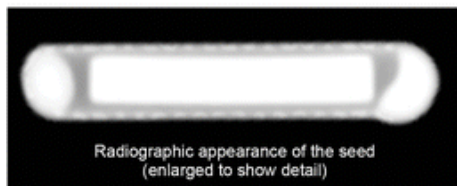
- ✓ Carbon marking
- ✓ Radio isotope seed localization
- ✓ Radio-guided occult lesion localization
- ✓ Magnetic seed localization (Magseed)
- ✓ Radiofrequency identification tags
- ✓ Radar reflectors

## Radio-active seed localisation

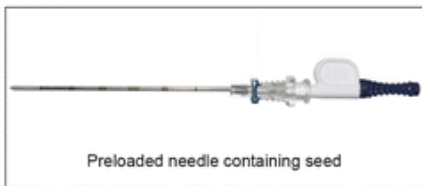
- Low positive margins
- Seed should be returned
- Seed migration



Radioactive seeds



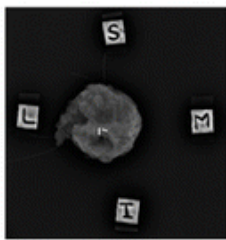
Radiographic appearance of the seed  
(enlarged to show detail)



Preloaded needle containing seed



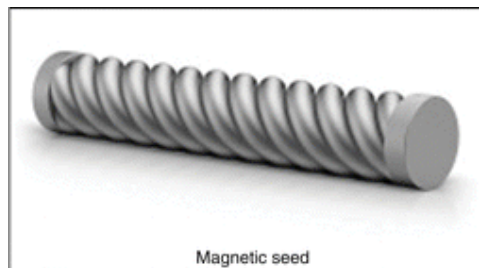
Geiger counter



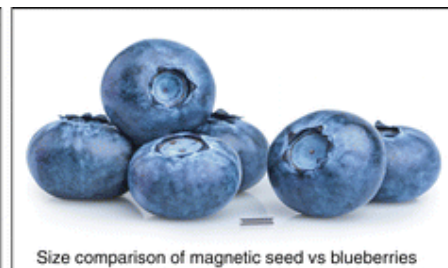
Specimen radiograph with seed

## Magnetic seed localization (Magseed)

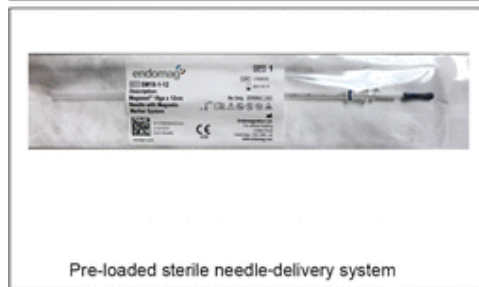
- Not used in patients with pacemaker, careful with OT instruments



Magnetic seed



Size comparison of magnetic seed vs blueberries



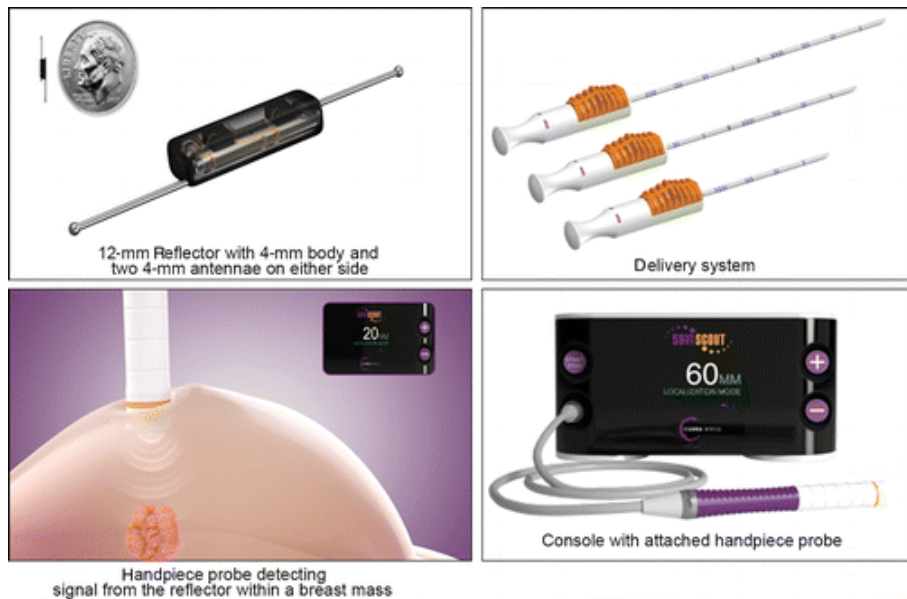
Pre-loaded sterile needle-delivery system



Probe

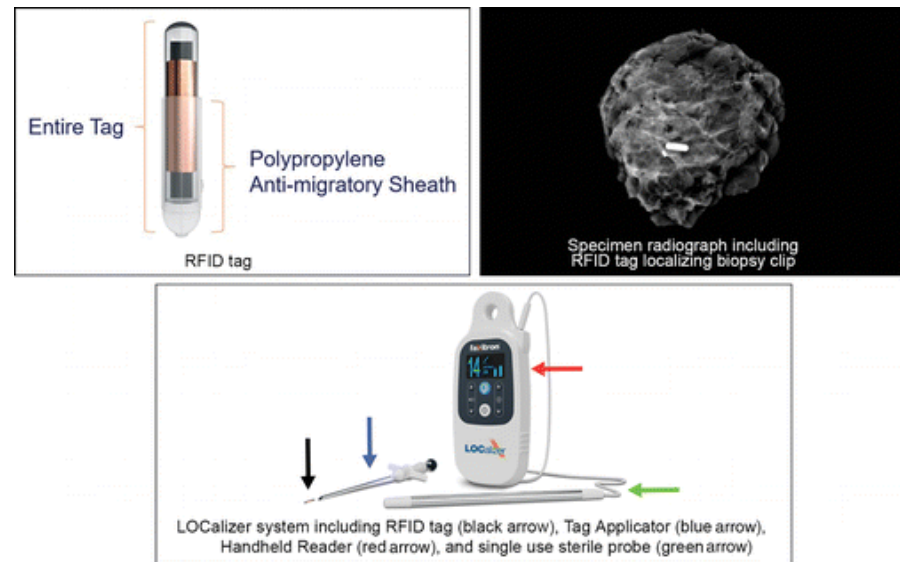
## Radar reflector localization system (Savi Scout)

- Audible and visual feedbacks
- Lack of signal from device



## Radiofrequency identification tags

- Tag is inserted at time of biopsy, reflector is activated using hand piece at time of surgery



# Axillary Management

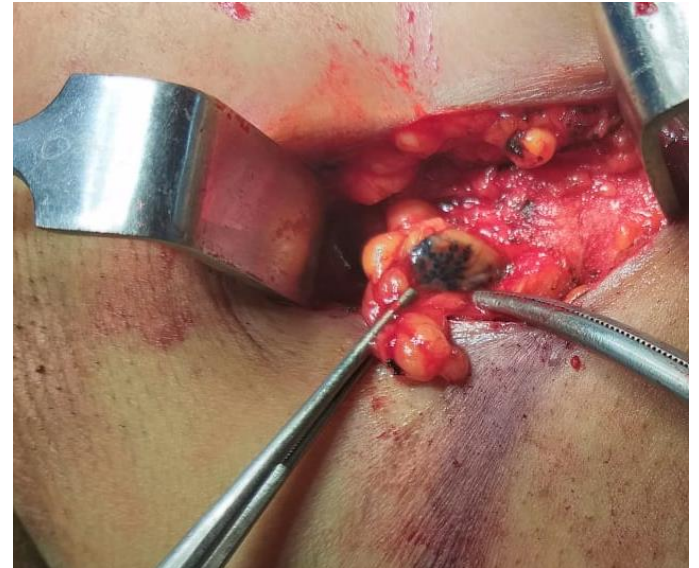
- Axillary lymph node dissection (ALND) – “Gold standard” for 20<sup>th</sup> century
- Replaced over the past decade by Sentinel Lymph node Biopsy (SLNB), Popularized by Armando E. Giuliano
- Axillary sampling – limited operation, four nodes are removed from low axilla

- SLN is defined as the first lymph node receiving lymphatic drainage
- Blue dyes
  - ✓ Isosulfan blue
  - ✓ Methylene blue
  - ✓ Patent blue
- Radioisotope tracer
  - ✓ Technetium 99m
  - ✓ Technetium 99m sulfur colloid
  - ✓ Technetium 99m nanocolloid human serum albumin
- Indocyanine green (ICG)
- Superparamagnetic iron oxide nanoparticle (SPIO)
- Contrast enhanced ultrasound(CEUS) with microbubbles

Gamma probe



Blue node



Indo-cyanine green dye



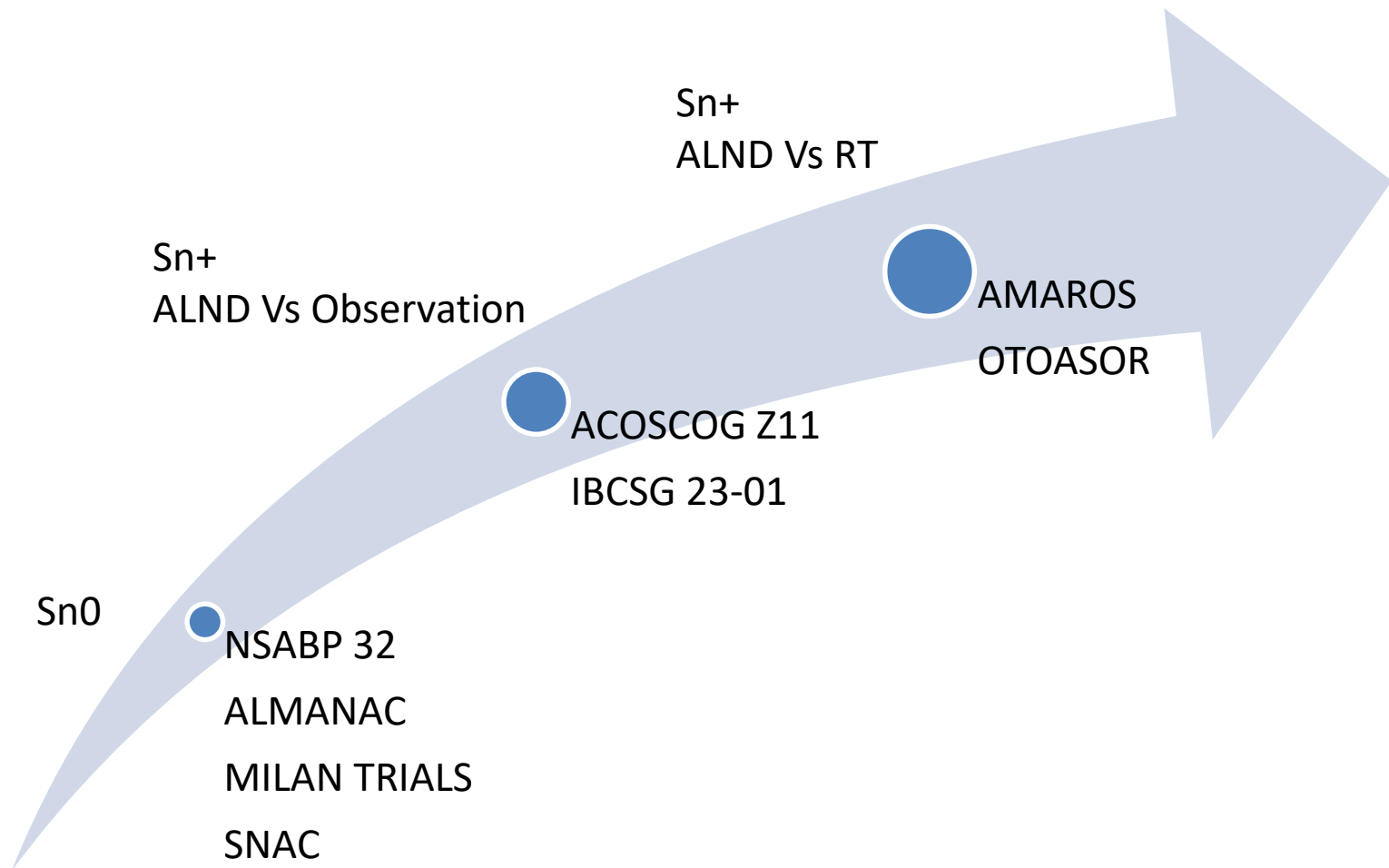
# SLNB is standard for clinically node negative axilla

Trial/author	Year	SLN identification (%)	Sensitivity (%)	False negativity (%)
Veronesi et al. [24]	2003	98.5	91.2	8.8
ALMANAC [25]	2006	98.0	93.3	6.7
Sentinella-GIVOM [26]	2008	95.0	83.3	16.7
SNAC [27]	2009	94.0	94.5	5.5
Canavese et al. [29]	2008	98.6	77.1	9.1
NSABP B-32 [28]	2007	97.3	90.2	9.8

Trial/author	Axillary recurrences (%)	Disease-free survival (%)	Overall survival (%)
Veronesi et al. [33]	0 vs. 0.01	88.8 vs. 89.9 (10 yr)*	89.7 vs. 93.5 (10 yr) <sup>†</sup>
ALMANAC [25]	0.84 vs. 0.2 (1 yr)	NR	NR
Sentinella-GIVOM [30]	0.05 vs. 0.01	89.9 vs. 87.6	95.5 vs. 94.8
Canavese et al. [29]	0.87 vs. 0.0	89.8 vs. 94.5 <sup>‡</sup>	97.2 vs. 97.2 <sup>§</sup>
NSABP B-32 [34]	0.1 vs. 0.3	82.4 vs. 81.5 (8 yr)	91.8 vs. 90.3 (8 yr)

Zahoor S, Haji A, Battoo A, Qurieshi M, Mir W, Shah M. Sentinel lymph node biopsy in breast cancer: a clinical review and update. Journal of breast cancer. 2017 Sep 1;20(3):217-27.

# Clinically negative axilla but positive sentinel lymph node



# Indications for ALND in the era of SLNB

- Patients outside Z11 criteria
- Prior inadequate ALND
- Validation of SLN biopsy
- Failed SLNB
- Clinically suspicious nodes identified at surgery
- T4 disease
- Unavailability of SLNB
- Axillary local recurrence

# Axillary management post NACT

- NACT downstages axilla in 20-40%
- GANEA and SENTINA trial looked into feasibility of SLNB post NACT
- Controversial issues are –
  - ✓ Technique of performing SLNB
  - ✓ Use of IHC for SLN evaluation
  - ✓ ALND vs RT
  - ✓ Best imaging tool to assess response

Classe JM, Loaec C, Gimbergues P, Alran S, de Lara CT, Dupre PF, Rouzier R, Faure C, Paillocher N, Chauvet MP, Houvenaeghel G. Sentinel lymph node biopsy without axillary lymphadenectomy after neoadjuvant chemotherapy is accurate and safe for selected patients: the GANEA 2 study. Breast cancer research and treatment. 2019 Jan;173(2):343-52.

Kuehn T, Bauerfeind I, Fehm T, Fleige B, Hausschild M, Helms G, Lebeau A, Liedtke C, von Minckwitz G, Nekljudova V, Schmatloch S. Sentinel-lymph-node biopsy in patients with breast cancer before and after neoadjuvant chemotherapy (SENTINA): a prospective, multicentre cohort study. The lancet oncology. 2013 Jun 1;14(7):609-18.

# Downstaging.....

Subtype	Breast PCR rate	Lymph node PCR rate
All patients	37%	49%
HR+/HER -	10%	21%
HR+/HER +	59%	70%
HR-/HER +	70%	97%
HR-/HER-	40%	47%

Mamtani A, Barrio AV, King TA, Van Zee KJ, Plitas G, Pilewskie M, El-Tamer M, Gemignani ML, Heerdt AS, Sclafani LM, Sacchini V. How often does neoadjuvant chemotherapy avoid axillary dissection in patients with histologically confirmed nodal metastases? Results of a prospective study. *Annals of surgical oncology*. 2016 Oct;23(11):3467-74.

# Targeted axillary dissection (TAD)

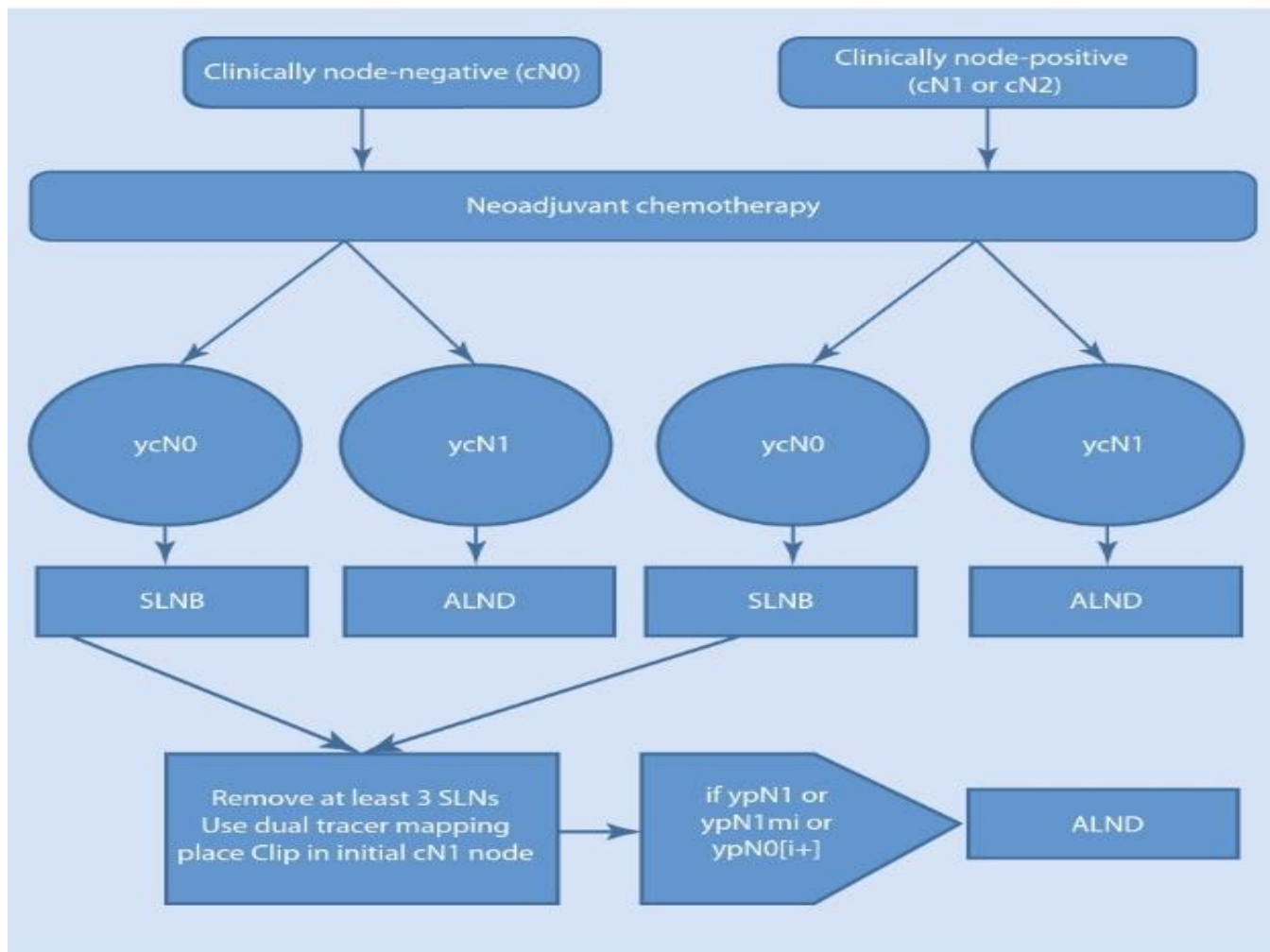
- Lymph nodes are clipped post FNAC/Biopsy and NACT started
- Post NACT, Clipped nodes are identified and dissected
- Identification rate 84-95%
- SLN+ Clipped node – 2% false negative rate
- MARI trial and RISAS trial

van Nijnatten TJ, Simons JM, Smidt ML, van der Pol CC, van Diest PJ, Jager A, van Klaveren D, Kam BL, Lobbes MB, de Boer M, Verhoef K. A novel less-invasive approach for axillary staging after neoadjuvant chemotherapy in patients with axillary node-positive breast cancer by combining radioactive iodine seed localization in the axilla with the sentinel node procedure (RISAS): a Dutch prospective multicenter validation study. *Clinical breast cancer*. 2017 Aug 1;17(5):399-402.

Donker M, Straver ME, Wesseling J, Loo CE, Schot M, Drukker CA, van Tinteren H, Sonke GS, Emiel JT, Peeters MJ. Marking axillary lymph nodes with radioactive iodine seeds for axillary staging after neoadjuvant systemic treatment in breast cancer patients: the MARI procedure. *Annals of surgery*. 2015 Feb 1;261(2):378-82.

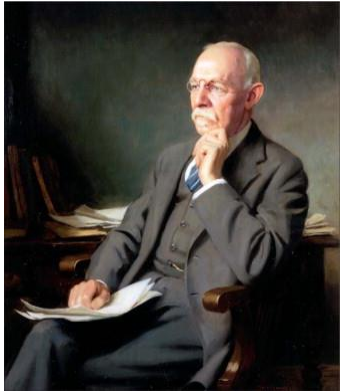
- Minimize FNR
  - ✓ Remove at least 3 SLN
  - ✓ Dual tracer
  - ✓ Intraop frozen section + IHC
- Perform ALND
  - ✓ Failed mapping
  - ✓ Less than 3 LNs dissected
  - ✓ Any positive SLN (including micrometastasis and ITC)

# Axillary management in neoadjuvant setting.....

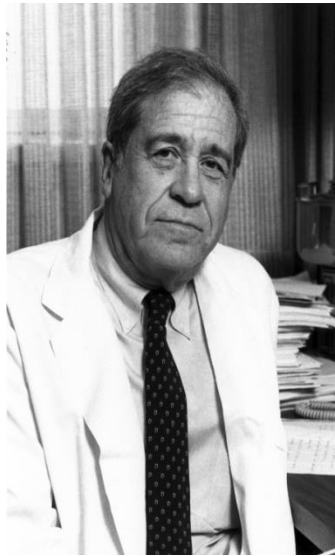


# Looking toward the future...

- Utility of SLNB in particular group of patients is being challenged now
  - ✓ SOUND
  - ✓ INSEMA
  - ✓ BOOG 2013-08
- Further de-escalation of axillary treatment for women with metastases in 1 or 2 SLN
  - ✓ POSNOC
  - ✓ SENOMAC
  - ✓ ALLIANCE A011202



WILLIAM  
HALSTEAD



VERONESI & FISHER



GIULIANO - SLNB



Systemic  
therapy  
Axillary RT

OBSERVE  
AXILLA?



**Big surgery cannot overcome bad Biology**

THANK YOU