

Lymph Node Dissection in Early Breast Cancer

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**Removing fewer lymph nodes doesn't
hurt breast cancer survival**

WHY ASSESS LYMPH NODE

- 1-prognosis
- 2-Improve Regional control
- 3-Guide adjuvant therapy
- 4-Improve Survival

Indications for ANB

- 1-Unable to do SLNB
- 2-Unable to find SLN
- 3-Positive SLN ?
- 4- Clinically axillary disease

Lymphatic Drainage

1. Axillary Lymph Nodes
 - 85% of drainage from all quadrants of the breast
 - Subdivided into level I, II, III surgically
2. Internal Mammary Lymph Nodes
 - The other 15% drain to the IM nodes.
3. Supraclavicular Lymph Nodes
 - Rarely the first site of drainage.

Lymph node areas adjacent to breast area.

A pectoralis major muscle

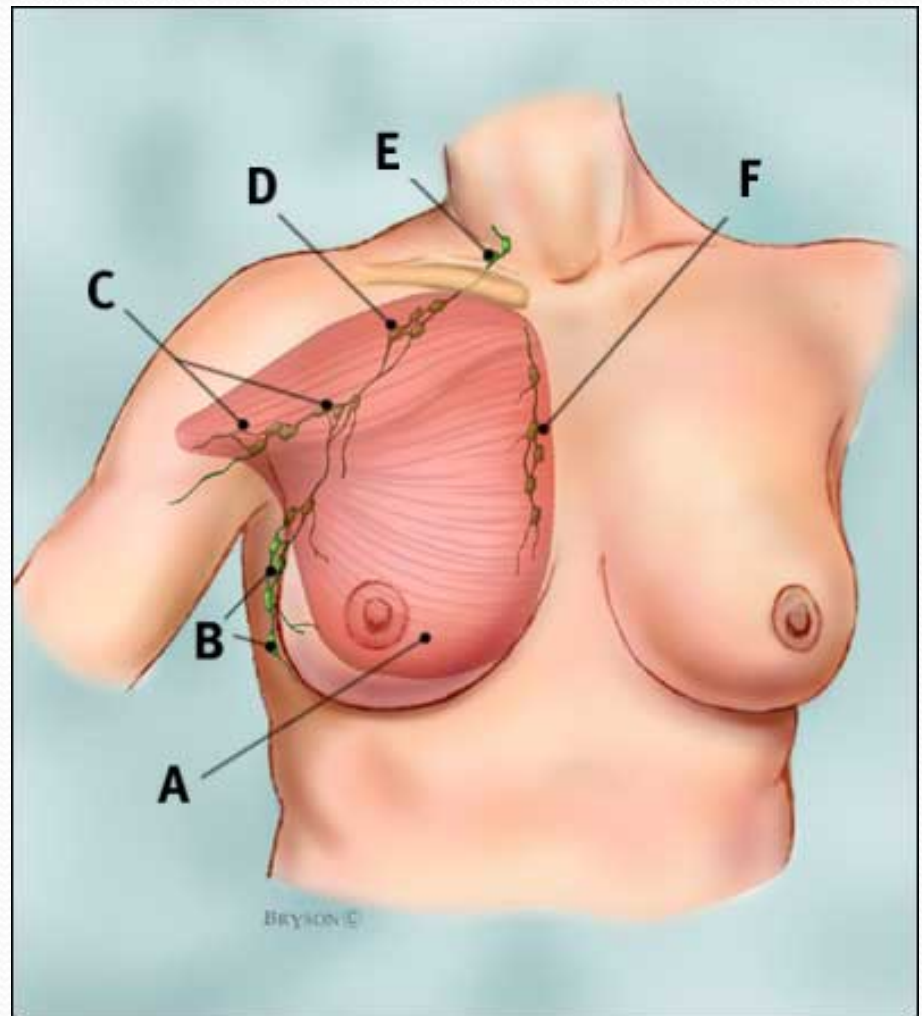
B axillary lymph nodes: levels I

C axillary lymph nodes: levels II

D axillary lymph nodes: levels III

E supraclavicular lymph nodes

F internal mammary lymph nodes



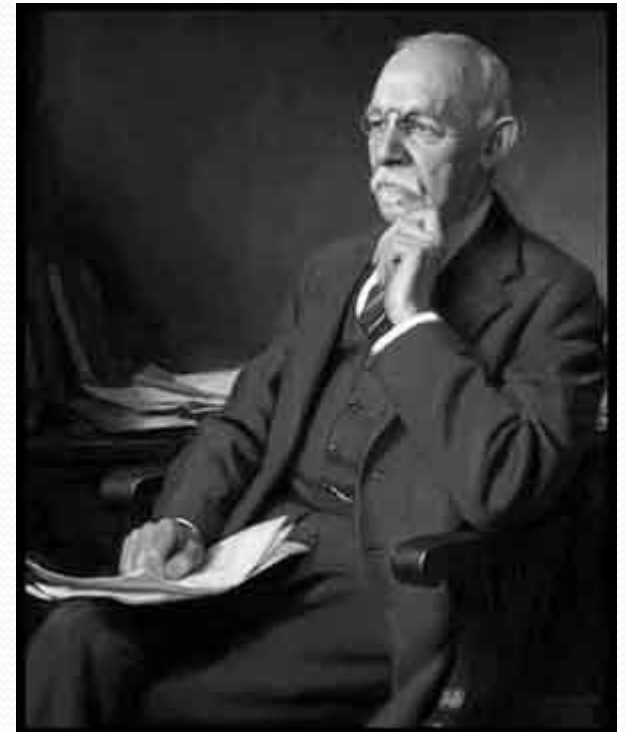
- Supraclavicular :
 - Involvement usually synonymous with extensive axillary involvement.
- Internal Mammary :
 - In one series about 5% occurred without axillary LN met.
 - Routine dissection abandoned given no survival benefit in several randomized studies².

Risk of Axillary Lymph Node Involvement

Tumor Size	Risk of ALN involvement
Tis	0.8%
T1a (0.1-0.5cm)	5%
T1b (0.5-1cm)	16%
T1c (1-2cm)	28%
T2 (2-5cm)	47%
T3 (>5cm)	68%
T4	86%

Radical Mastectomy

- Axillary dissection introduced in 19th century:
- Pioneered by William Stewart Halsted (1852-1922).
 - Described in 1882: Removal of breast tissue + axillary lymph nodes (I-III) + both pectoral muscles



- Radical mastectomy lead to significant subsequent deformity, diminished upper ext. function and intraoperative blood loss.
- In the 1930s, D. H. Patey of London popularized “Modified radical mastectomy”:
 - Sparing pectoral muscles and level III ALNs.
 - Long term followup did not show any recurrence in the preserved muscles and rarely in level III nodes.

To Dissect or Not to Dissect

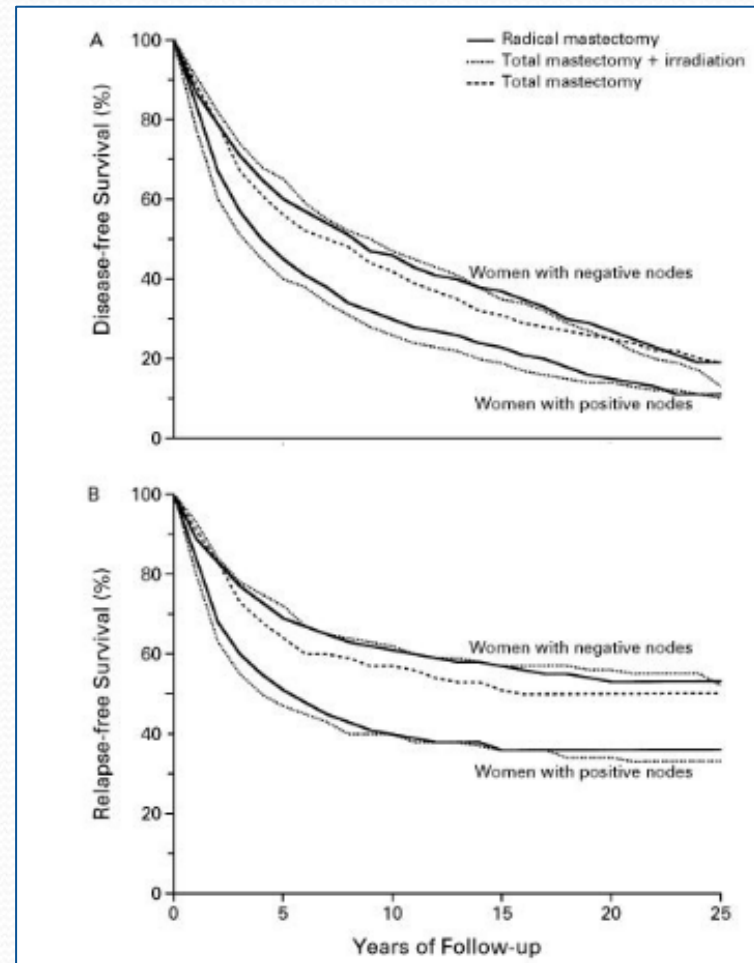
- To dissect:
 - Firmly establish extent of disease
 - Remove more foci of malignancy in hopes of better survival/recurrence rate
- Not to dissect:
 - High risk of lymphedema, seroma, decreased arm mobility
 - Does knowledge of node positivity affect management?
 - Does removing these extra foci of cancer improve survival or risk of recurrence?

NSABP-04

- National Surgical Adjuvant Breast and Bowel Project – B04
- Purpose: Do either clinically node positive or negative breast cancer patients benefit from ALND?
- 1079 patients with clinically neg nodes randomized to (1) radical mastectomy (w ALND) (2) total mastectomy + radiation, (3) total mastectomy with delayed ALND if later clinically positive nodes developed.
- 586 patients with clinically positive nodes randomized to radical mastectomy (w ALND) vs total mastectomy with postop radiation.

NSABP-04

Overall survival at 10 and 25 years identical among node negative arms and also between the two node positive groups.

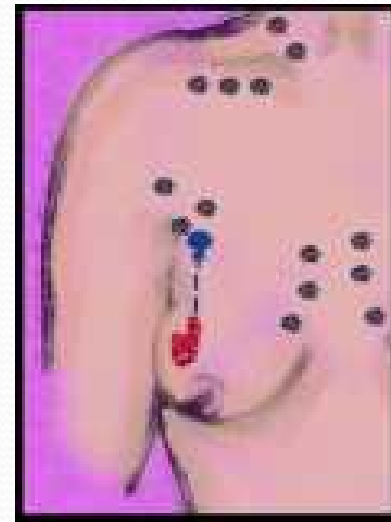


Sentinel Lymph Node

- In 1994, Giuliano and colleagues first described the use of sentinel lymph node biopsy in breast cancer.
- Initially just using blue dye, gradually both dye and radioisotopes were used to map the draining lymph nodes.
- Anecdotal evidence suggested sentinel lymph node status could predict axillary lymph node involvement.

Concept of Sentinel Lymph Node

- The first lymph node into which the primary tumour drains
 - SLN negative = remainder of lymph nodes negative
 - SLN positive = higher order nodes may be positive or negative
- SLN biopsy
 - SLN positive = ALND



History

- *Morton DL et al 1992* – intradermal blue dye injection to map lymphatic and localised SLNs in malignant melanoma
- *Alex JC et al 1993* - localised SLNs using intradermal ^{99m}Techneium colloid in melanoma

Localization of SLN in Breast Cancer

- Modality

- *Giuliano AE et al 1994* – blue dye
- *Albertini JJ et al 1996* – combined
- *Liberman L et al 2003* -Meta-analysis

	Identification rate	Sensitivity
Blue Dye	790/993 = 80%	270/296 = 91%
Radioactive colloid	1768/1934 = 91%	604/650 = 93%
Combined	796/873 = 91%	256/270 = 95%

Liberman L et al 2003

- Site

- Intra/peri-tumoural 90% vs subdermal or sub-areolar 98% *McMasters KM et al 2001*

Advantage of SLN

1-Localisation 97.9%

2-Reduction in operating time

3-Significantly shorter hospital stay

4-Less arm morbidity & better quality of life

Contraindication for SLNB

- 1-Palpable LN
- 2-Unexperience Surgeon for SLNB
- 3-Prophylactic mastectomy
- 4-pregnancy
- 5-Locally advanced tumor T₃
- 6-Previous axillary surgery or radiation
- 7-Pre-operative chemotherapy
- 8-Allergy to drug & Multifocal tumor

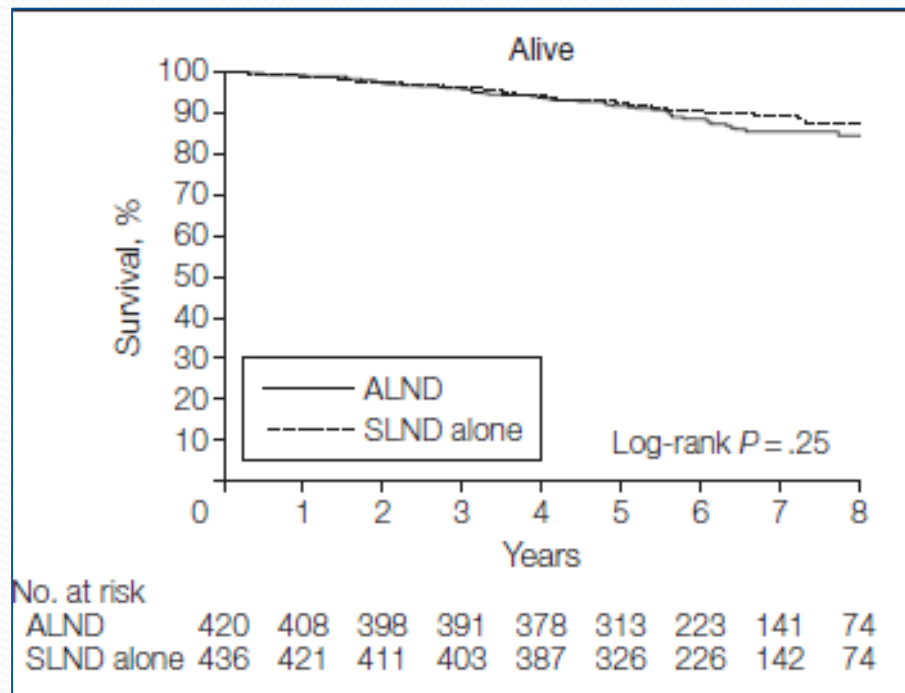
 ORIGINAL CONTRIBUTION

Axillary Dissection vs No Axillary Dissection in Women With Invasive Breast Cancer and Sentinel Node Metastasis

A Randomized Clinical Trial

JAMA, February 9, 2011- Vol 305, No. 6

Overall Survival

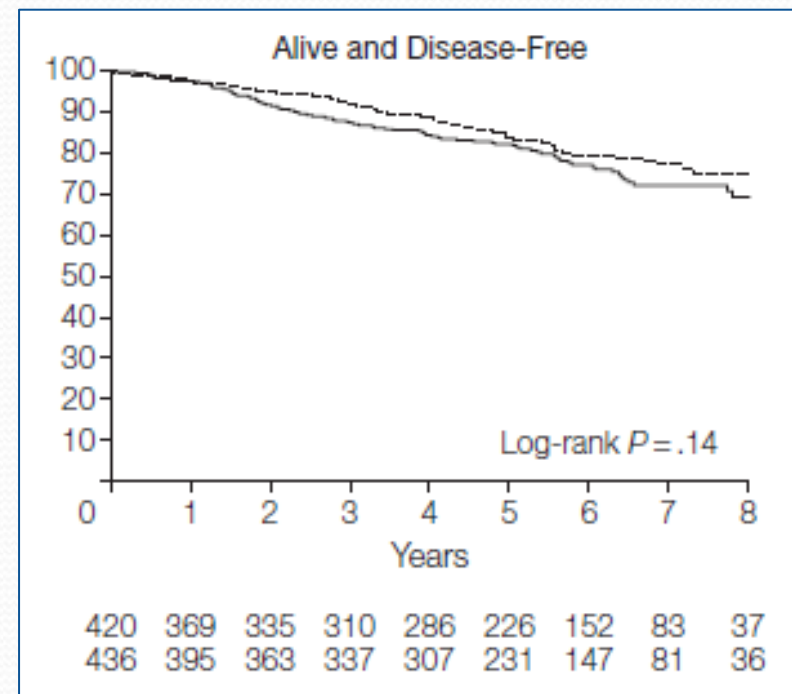


- The 5-year overall survival: 91.8% in ALND group vs 92.5% in the SLND-alone group.

Non-inferiority $P = 0.008$

Disease Free Survival

The 5-yr DFS:
83.9% for the SLND-
only group vs
82.2% in the ALND
group ($P=.14$).

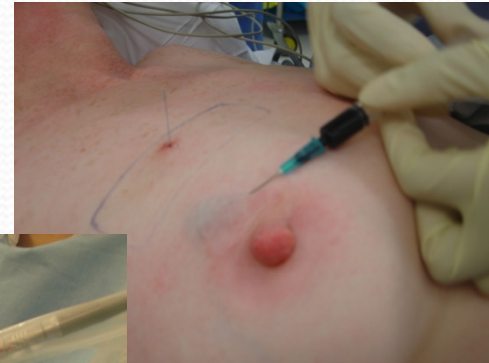


Conclusions

- Breast cancer surgery started as “radical” and has continuously become more conservative.
- Axillary dissection has long been a controversial part of breast surgery.
- SLN has already spared ~ 65% of patients from axillary dissection who have negative sentinel lymph nodes.
- NSABP and Z0011 trial both argue that ALND is also not beneficial for most patients with positive SLNs.
- SLNB will be offered as alternative to AND to all cases of clinically node-ve T1 or T2 breast ca

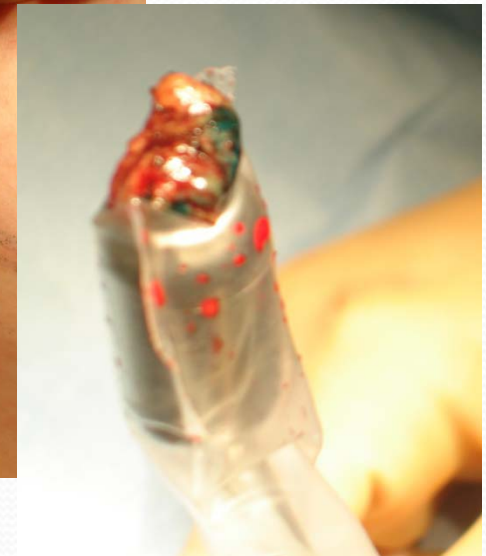
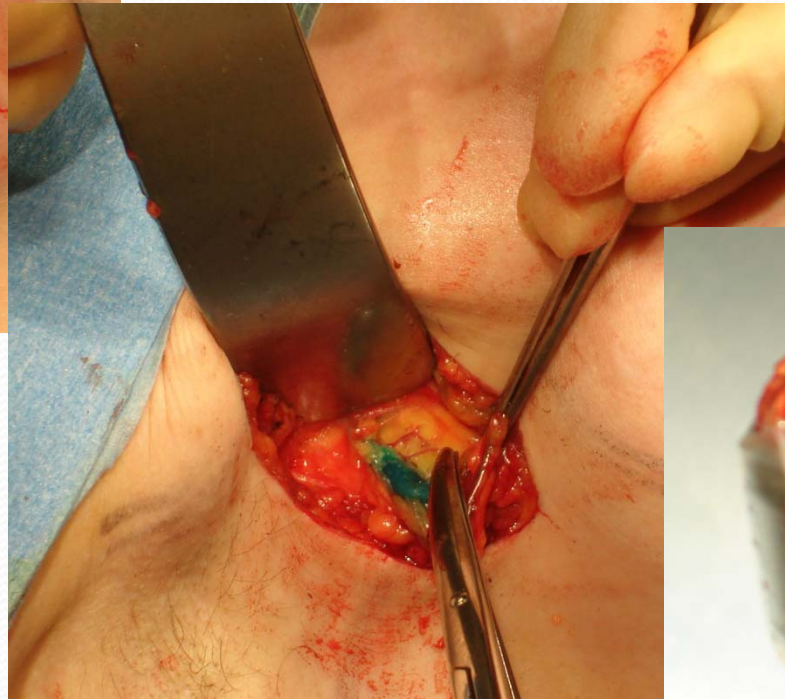
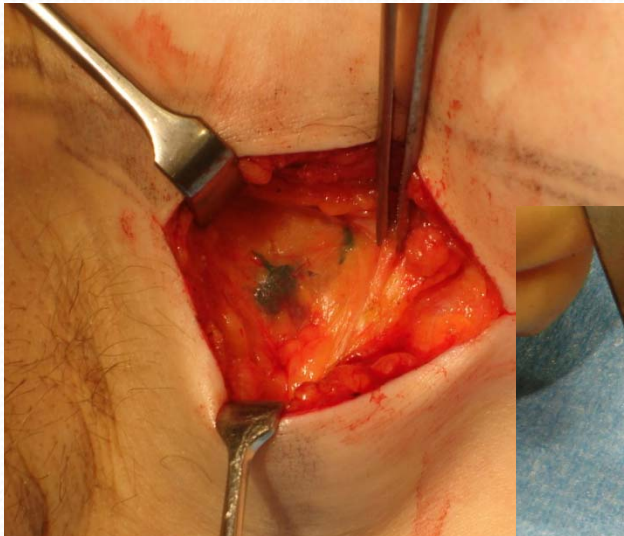
Patient Pathway

Injection of Patent Blue Dye & Measurement of Radioactivity



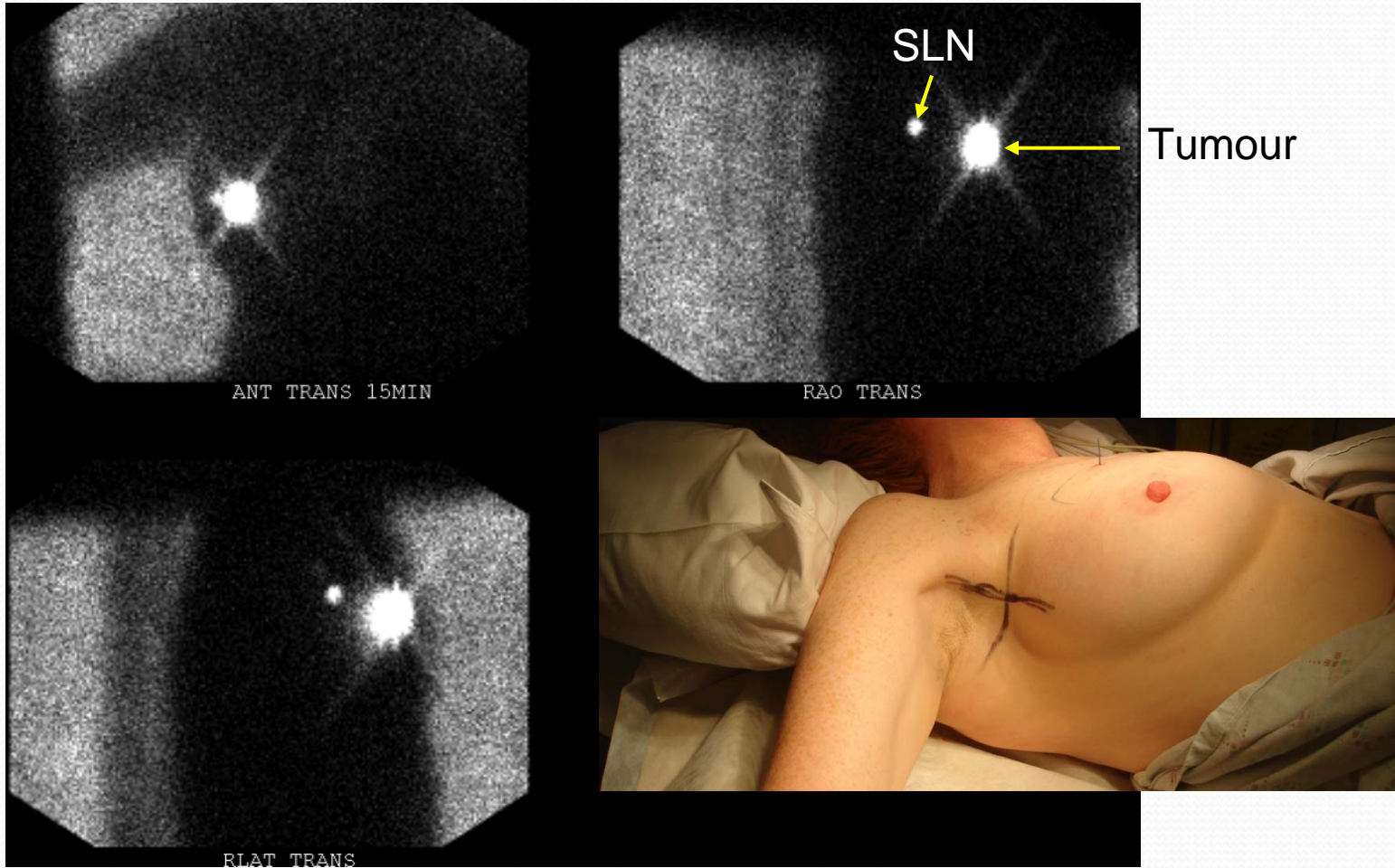
Patient Pathway

Identification & Excision of SLN



Patient Pathway

Radioactive Colloid Injection & Imaging



Summary

1. *SLNB predict axillary lymph node involvement..*
2. **SLNB requires team of surgeon , radiologist ,pathologist and nuclear medicine in its establishment.**
3. *Combination of radioactive and dye methods improve SLNB results..*
4. **Experienced surgeon who did more than 30 SLNB, with ALND for confirmation.....can have accuracy of 90 %...**
5. *Clinical Knowledge and orientation of SLNB is a prime step of the start point in axillary management of breast cancer.*



Thanks