

ΑΚΤΙΝΟΘΕΡΑΠΕΙΑ ΚΑΡΚΙΝΟΥ ΜΑΣΤΟΥ
ΠΟΤΕ ΑΚΤΙΒΟΒΟΛΟΥΝΤΑΙ ΟΙ ΕΠΙΧΩΡΙΟΙ ΛΕΜΦΑΔΕΝΕΣ. ΤΙ ΝΕΟ
ΥΠΑΡΧΕΙ?



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Β'ΕΡΓΑΣΤΗΡΙΟ ΑΚΤΙΝΟΛΟΓΙΑΣ ΠΑΝΕΠΙΣΤΗΜΙΟΥ ΑΘΗΝΩΝ
ΑΤΤΙΚΟ ΝΟΣΟΚΟΜΕΙΟ

Regional Nodal Irradiation (RNI)

- regional nodal management, an integral part of the care plan for BCa
- “eradication of residual microscopic disease in the lymphatics may improve BCa survival”

Halsted theory

- “more minimal approach to nodal management in a disease that exhibits distant micrometastasis at an early stage”

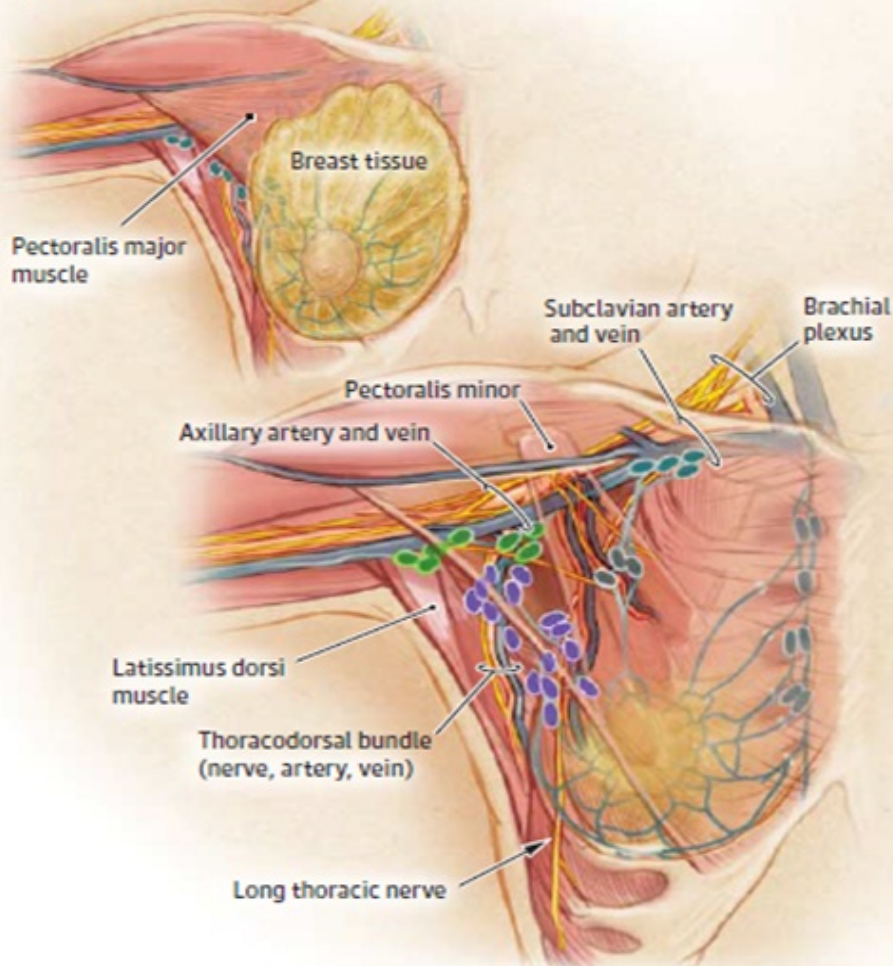
Fisher’s hypothesis

- debate on the need and/or extent of regional lymphatic treatment; a debate centered mainly on the extent of subclinical residual disease in the lymphatic region and on the subsequent regional recurrence risk weighted against the treatment toxicity
- “the truth likely lies somewhere in between”

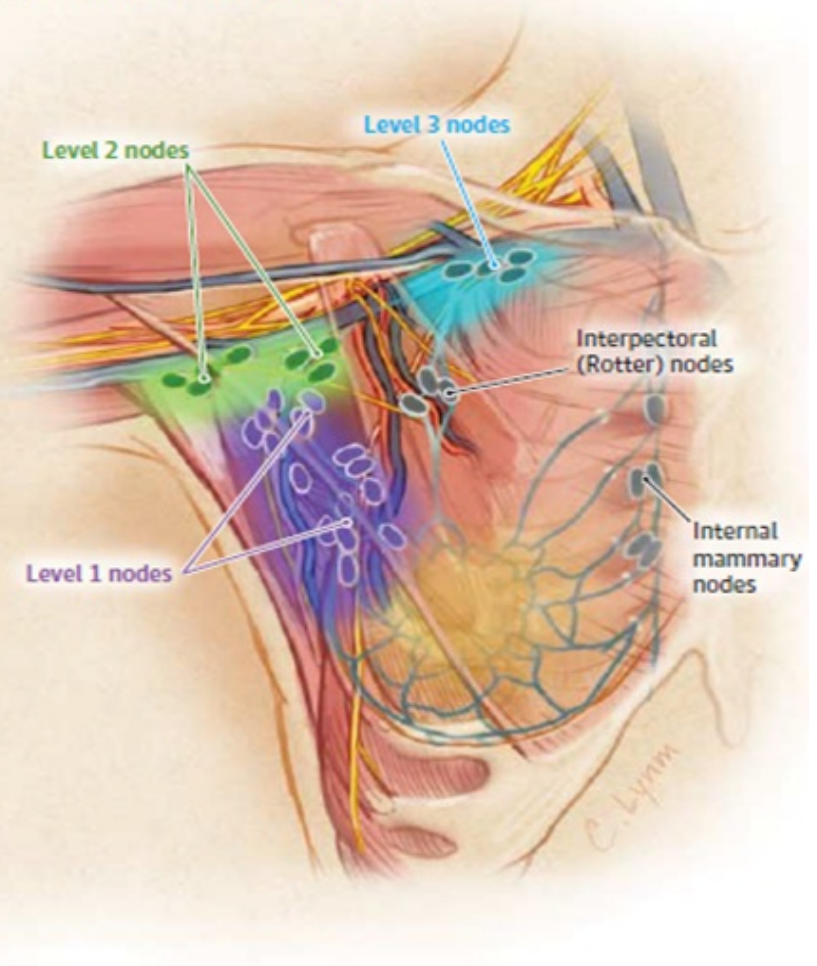
Hellman

anatomy

A Anatomical landmarks of the axilla



B Lymphatic drainage of the breast

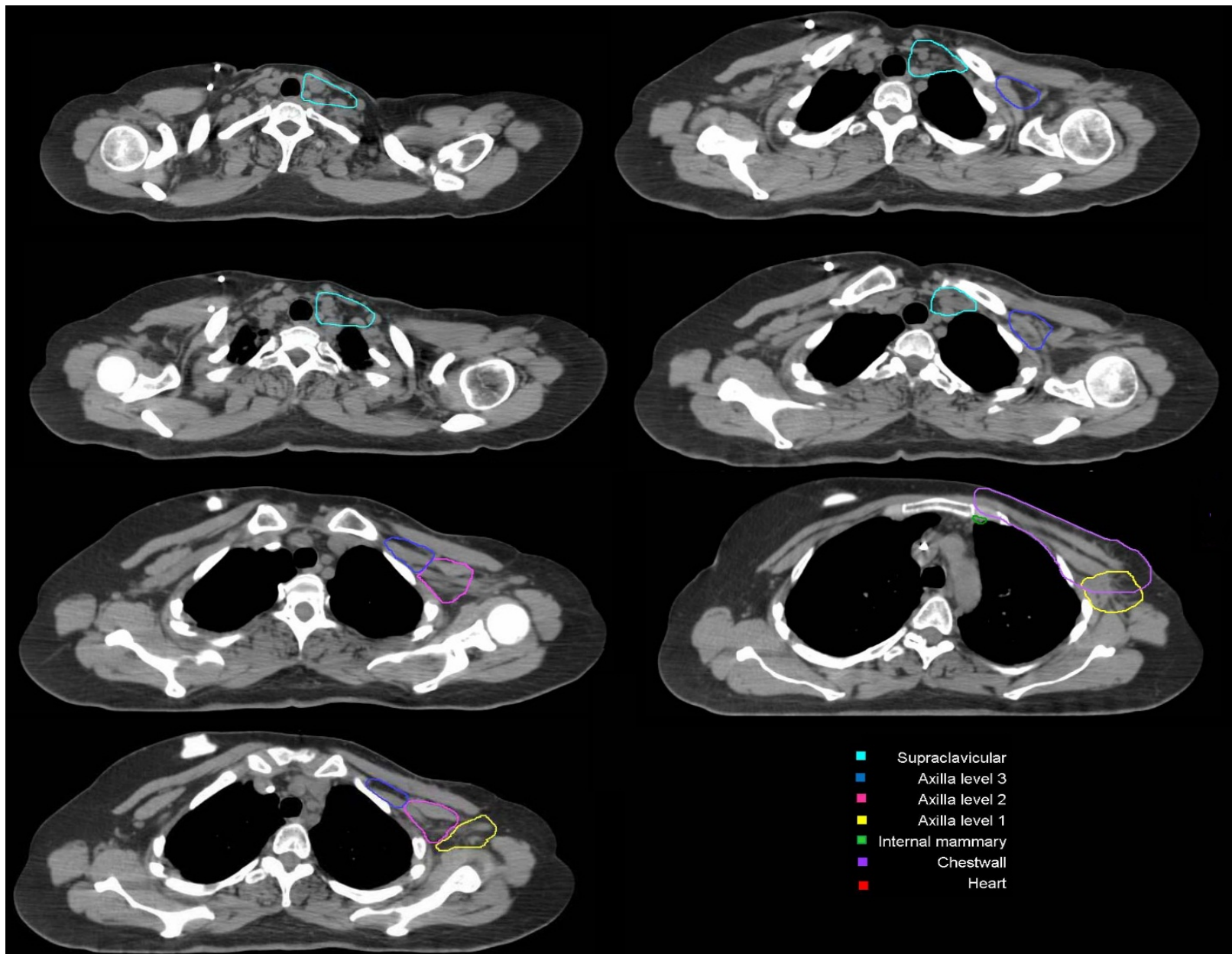


Sentinel nodes are identified within levels 1 and 2. Anatomical landmarks of the thoracodorsal bundle, long thoracic nerve, and axillary vein are used to delineate tissue removed during a level 1 and 2 complete axillary lymph node dissection.

anatomy

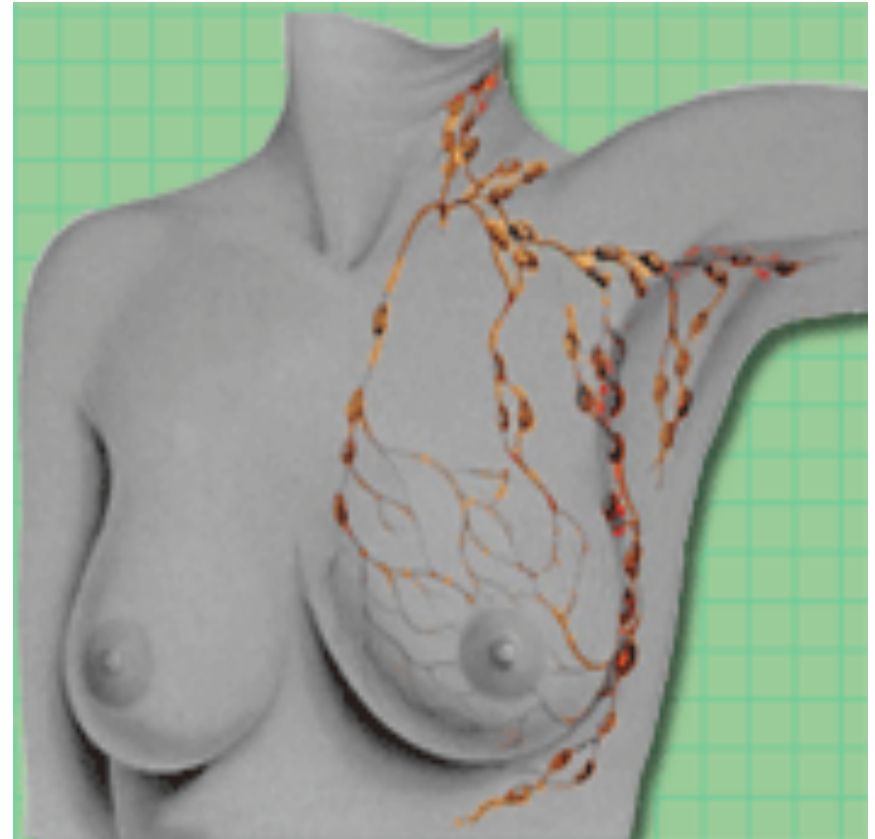
- axillary LNs divided into three levels by relation to pectoralis minor muscle:
 - level I (low axillary): inferior/lateral to pectoralis minor
 - level II (midaxillary): directly beneath pectoralis minor
Rotter's nodes (interpectoral): considered level II, between pectoralis major and minor
 - level III (apical or infraclavicular): superior/medial to pectoralis minor muscle
- internal mammary LNs (IMLN): 1st to 5th intercostal spaces, 3-3.5 cm from midline
- supraclavicular LNS

anatomy



anatomy

- the primary drainage of the breast is to the axilla, regardless of location of primary tumor.
- very few tumors will have primary drainage to internal mammary nodes.
- for patients with involved axillary nodes, risk of IMN involvement increases, especially with tumor in medial location.

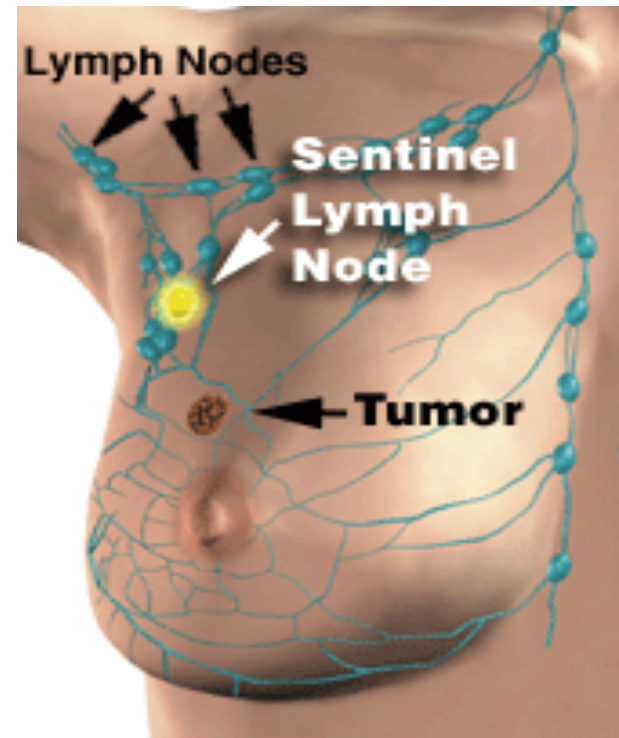


sentinel lymph node biopsy (SLNB)

- evaluation of nodes became “easier”, less morbidity to patients and less extensive surgery
- false negative rate is similar to ALND (2-12%), likely not increased with neoadjuvant ChT

Buchholz et al. 2008

- very low rate of subsequent axillary recurrence (<5%)
- completion of ALND indicated in the case of involved SLNB (controversial in case of pN1mi+ or low risk disease, nomograms can be used to assess risk for nonsentinel node positivity and ALND may be omitted if <10% risk)



nodal involvement & clinical failure

Discrepancy between BCa Nodal Involvement and Subsequent Clinical Failure Without RNI

Study	N	MFU (years)	Design	Systemic therapy	MLNR	ALN (%)	Clinical failure (%)	Failure site
NSABP-B04 (19)	1,079 ¹	25	MRM versus TM+RT versus TM	None	15 ²	38.6 ²	18.6 ³	Axilla
ECOG (12)	2,016	12.1	MRM in four ECOG studies	Methotrexate Based	15	>30	5.6	SCV
							2.2	Axilla
							0.1	IMN
NSABP (13)	5,758	11.1	MRM in five NSABP studies	Doxorubicin based ⁴	16	>20	2.8	SCV
							1.4	Axilla
							<0.12	IMN
IBCSG 10-93 (20)	473 ^{1,5}	6.6	S ⁶ ± ALND ⁷	Tamoxifen	13	28	0	SCV/IMN
							3	Axilla
Livi (21)	2,064	16.6	MRM or TM +ALND	Chemotherapy (27%)	18	>20	5.2	SCV
							0.8	Axilla
							1.5	IMN
Storm (22)	1,031	9.6	MRM +ALND	Doxorubicin based	>10 (89%)	>20	8	SCV
							3	Low axilla

ALN, Axillary lymph node approximate microscopic involvement; ALND, axillary lymph node dissection; ECOG, Eastern Cooperative Oncology Group; IBCSG, International Breast Cancer Study Group; IMN, internal mammary node; LRF, loco-regional failure; MFU, median follow-up; MLNR, median number of resected lymph node; N, Number of patients; NSABP, National Surgical Adjuvant Breast and Bowel Project; MRM, modified radical mastectomy; RT, Radiotherapy; SCV, Supradavicular region; TM, total mastectomy.

current guidelines

- current guidelines:
 - RNI indicated for ≥ 4 positive nodes (estimated LRR $>20\%$)
 - debate in women with 1-3 positive nodes (LRR $<15\%$)
 - consider if high risk features present:
 - ECE
 - LVSI
 - less than 10 LNs removed in ALND
 - $\geq 20\%$ of dissected LNs (+)

what has changed?



RESEARCH

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Adjuvant radiotherapy of regional lymph nodes in breast cancer - a meta-analysis of randomized trials

Wilfried Budach^{1*}, Kai Kammers², Edwin Boelke¹ and Christiane Matuschek¹
Budach et al. Radiation Oncology 2013, 8:267